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LETTER OF TRANSMITTAL

GROUPING STRUCTURES OF GIFTED AND HIGH ACHIEVING

MIDDLE SCHOOL STUDENTS: TEACHER PERCEPTIONS AND

DATA ANALYSIS OF THE IMPACT OF GROUPING

By

April Leigh Smith

A Dissertation

Submitted to the Faculty of

Columbus State University

In Partial Fulfillment of the Requirements

for the Degree of Doctor of Education

in Curriculum and Leadership

Columbus State University

Columbus, GA

April 2017

Copyright by

April Leigh Smith

2017

DEDICATION PAGE

Dedicated to Jason Scott Smith

Your constant support, encouragement, and love has allowed me to realize my potential.

Thank you for everything.

ACKNOWLEDGEMENT PAGE

Thank you, Dr. Marguerite Yates, for your constant, consistent, and concise advice during this process. I have been incredibly fortunate and blessed to have you as the chair of my committee. Despite your objections, I sincerely doubt that I could have done this without you. You have been approachable, knowledgeable, supportive, available, and helpful, and for that, I am most grateful.

Thank you, Dr. Richard Rogers, for your prompt and thorough analysis of the constant barrage of paperwork that I shared. You have been an awesome instructor, and your attention to detail goes above and beyond what is expected of a committee member. I consider myself privileged to have had you on board, and I thank you for your help and leadership.

Thank you, Dr. Jan Burcham, for your insight, expertise, and guidance. You provided me with clear direction and vision for every step of this process, and I appreciate your gift of counsel as a member of my committee.

Dr. Yates, Dr. Rogers, and Dr. Burcham, the three of you completed the ultimate dream team of committee members and I want to thank you collectively for supporting and guiding me through this process. I appreciate all that you have done and hope to work with you all again in the future.

Also, Dr. Dawn Frazier, thank you so much for your crucial instruction regarding statistics. Thank you for helping me understand unfamiliar concepts and for your invaluable feedback as I struggled with quantitative methodology.

It has been an honor to work with each of you. I appreciate all of your help.

VITA

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ABSTRACT

In this mixed methods study on teacher perceptions and data related to the impact of grouping structures on middle school gifted and high achieving students, the researcher addresses the gap in literature relating to recent gifted grouping research in rural areas. The study took place in two middle schools of a rural school district in Georgia. A sequential explanatory design was applied to survey responses and focus group data regarding teacher perception of grouping; a comparative ex post facto design was applied to state-issued end of year assessment results and analyzed for trends regarding grouping for gifted and high achieving students; finally, relationship data between teacher perception and student assessment results were also analyzed. Teacher perception survey results indicated that teachers agreed on concepts of high expectations and rigor for students, but disagreed on the best grouping structure for gifted and high achieving students. These perspectives were further elaborated upon in purposeful stratified sample focus groups, where the themes of *Academic Performance, Personal and Social Effects, Equity, Discipline, Teaching,* and *Outside Variables* were developed. Student assessment data came from 2015 and 2016 Georgia Milestones results of gifted and high achieving students who were served in either a homogeneously accelerated or heterogeneously clustered model for 8th grade math, 8th grade science, 8th grade language arts, 7th grade math, and 7th grade language arts. Results for assessment and grouping data were mixed and inconclusive, as was the relationship data between teacher perceptions and student

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CHAPTER I

INTRODUCTION

Introduction

How should students be grouped together? Is it better for students of similar abilities to be put together within a homogeneous setting or is it better to mix abilities within a heterogeneous one? These are questions that have been asked for nearly as long as formal education has been around (Slavin, 1987). The purpose of this research study was to analyze teacher perspectives and data on grouping structures of gifted and high achieving middle school students within a rural school district in Georgia.

The major argument for homogeneous ability grouping and tracking is for class pacing and acceleration purposes (Kulik, 1993). The major argument against such grouping is that it locks lower students into a less successful track and condemns them for failure (Oakes, 1985). There has been a pendulum effect when it comes to opinions on grouping in public schools for the past century. Initially, ability grouping was viewed as favorable, then unfavorable, and then favorable again (Loveless, 1998). The issue is still debated today.

Along with public opinion, there have been many legal issues regarding ability grouping. Viewed as prejudicial and segregatory of lower-socioeconomic classes and minorities, ability grouping has been the topic of many court cases. Ability grouping itself has never been classified as unconstitutional, although several school districts throughout the legal history of the topic have had to adjust practices that display segregatory patterns.

The National Education Association (2015) does not support homogeneous grouping structures that are exclusive in nature. Currently, the best practices for grouping involve flexible grouping that is fluid in transition between homogeneous and heterogeneous structures for students. Nationally, federal legislation has been focused on best practices that benefit all students. Internationally, there are many different opinions of grouping around the globe. Though many countries have homogeneously structured schools, this is a common debate for all developed nations (OECD, 2012).

Supporters of ability grouping generally claim that it is beneficial for gifted and high-achieving students. Ability grouping in accelerated and magnet classes has shown greater gains in student achievement (Mingming & Xinzheng, 2014). Opponents of ability grouping claim that grouping students homogeneously has negative effects on self-concept, self-esteem, and ability for all students, but particularly for lower achieving students (Pritchard, 2012). This is of particular interest for middle school students, which deal with many developmental issues concerning self-concept and self-esteem (Stanley, 1989).

Statement of the Problem

The question over how to best group students has been intensely researched and debated. Though hundreds of studies have been conducted regarding this topic, research focused on grouping structures and the impact within rural schools has been largely ignored throughout American history (Pritchard, 2012). The purpose of this study was to contribute to this gap in the literature as the study was conducted in an area that fits this description of being rural. Additionally, research on teacher perspectives on the impact of grouping on gifted and high achieving students has been minimal. Johnston and Wildy (2016) discussed the need for more research on teacher perceptions of grouping influencing learning outcomes for students. Additionally, while Missett, Brunner, Callahan, Moon, and Azano (2014) conducted a study on teacher beliefs of acceleration and ability grouping, the researchers stated that they did not gain enough information about teacher beliefs of acceleration strategies for gifted students. The researchers recommended that future studies analyze this in order to benefit education for gifted and high achieving students.

The researcher proposed contributing to the literature by taking a closer look at teacher perceptions and the impact of grouping structures on achievement of gifted and high achieving middle school students. Therefore, the researcher attempted to answer the following research questions by conducting this study.

Hypotheses/Research Questions

The research questions used to base this study upon are as follows:

1) What are teacher perceptions of how grouping impacts gifted and high achieving students?

2) Does student achievement and growth differ for gifted and high-achieving students according to student grouping?

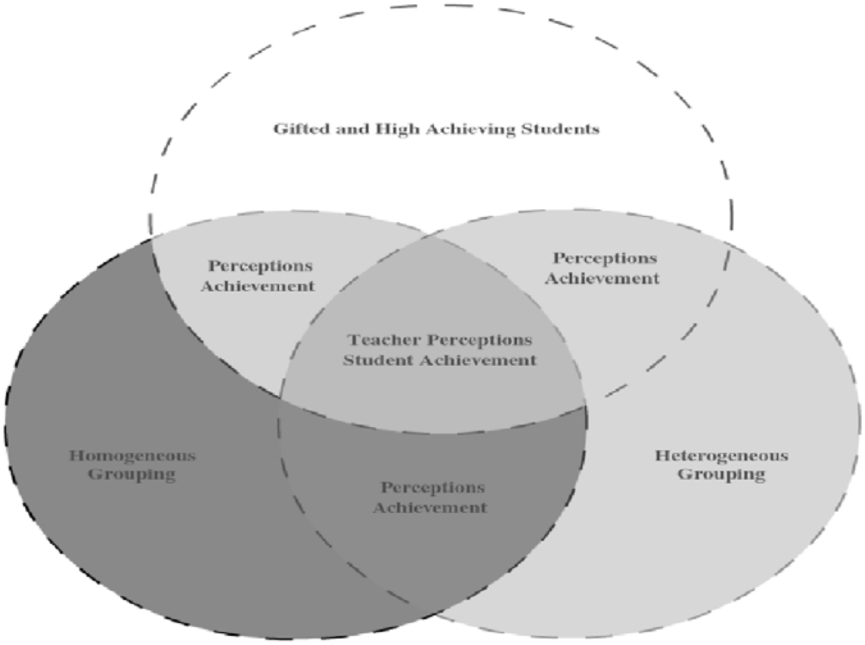
3) What is the relationship between teacher perceptions and data of student achievement and grouping for gifted and high achieving students?

Conceptual Framework

The purpose of this study was to analyze how teachers perceive grouping structures to impact student achievement for gifted and high achieving students in middle school. The variables that make up this stem from the research questions are achievement, homogeneous, heterogeneous, gifted and high achieving students.

The researcher analyzed student achievement and grouping for gifted and high achieving students, how achievement differed depending on the grouping structure for gifted and high achieving students, how teachers perceived the impact of grouping structures on gifted and high achieving students, and the relationship between teacher perceptions and the achievement data related to grouping gifted and high achieving middle school students. That being said, the basis of this study was on how grouping impacts gifted and high achieving students. Therefore, the following diagram illustrates that foundation, while all of the other variables are contained in the overlap.

Diagram 1- Impact of grouping on gifted and high achieving students in regards to teacher perceptions and student



Importance of the Study

When No Child Left Behind (NCLB) became law, teachers were required to focus on meeting a minimum standard of proficiency for all students (Jolly & Robins, 2016). Though equality and education is a right as American citizens, there is one population that has often been ignored during this process. This is the gifted and high achieving student. The purpose of this study was to shed light on a deserving population in a region that is frequently overlooked (Pritchard, 2012). In recent years, Race to the Top (RT3) and the College and Career Ready Performance Index (CCRPI) have mandated increased rigor for all of students in Georgia. These new regulations and accountability measures have redefined what academic success looks like (GADOE, 2015).

This study was significant because it addressed issues that were identified and recommended by Plucker and Callahan (2014) regarding the current state of gifted education, specifically that “[gifted grouping] fallacies should be more assertively questioned” (p. 398). The researchers recommended that analysis of ability grouping conditions impact on student outcomes be conducted, and they concluded that research of this type would greatly benefit the education of gifted and high achieving students. By participating in this study, the researcher and participants were able to reflect upon the current status of gifted programming and the impact of grouping on these students.

Furthermore, teacher perspectives can influence teacher attitudes and outcomes. It is necessary to better understand how teachers feel about this subpopulation of students and how they are being served. Participation in this study could potentially influence future policy decisions related to grouping structures and gifted programming. The implications are endless and the importance is real.

Procedures

The researcher utilized a mixed methods methodology in order to collect data related to teacher perceptions of the impact of grouping structures on gifted and high achieving students in middle school. The researcher utilized a sequential explanatory design (Creswell, 2014) that incorporated two phases, a quantitative phase followed by a qualitative phase. In order to answer the research questions, various survey instruments were utilized. The research questions for the current study were as follows:

1) What are teacher perceptions of how grouping impacts gifted and high achieving students?

2) Does student achievement and growth differ for gifted and high-achieving students according to student grouping?

3) What is the relationship between teacher perceptions and data of student achievement and grouping for gifted and high achieving students?

In order to determine the relationship between student achievement and grouping, data collected from the Statewide Longitudinal Data System (SLDS) regarding Georgia Milestone assessment results were compared to grouping data provided by the middle school principals involved in the study. This information tied into the second research question, as student achievement data from SLDS were compared with the grouping data that were previously referenced. Analyzing this information provided the researcher with quantitative data to report.

A survey instrument was distributed to the faculty of the middle schools involved in the study to gain insight into teacher perspectives. After reviewing the results of this initial survey, a focus group was created for each school, which incorporated teachers from the respective schools involved in the study. The focus group included a stratified purposeful sampling (Creswell, 2014) of teachers to fully address the range of opinions on the topic.

The population of this study consisted of the two middle schools of a rural Georgia school district. One middle school had a population of 780 students with 125 gifted students (16% of the population). The other middle school had a population of 646 students with 73 gifted students (11.3% of the population). The combined faculties of the schools totaled 89 teachers.

The survey instrument was sixteen questions in length and asked questions about teacher perceptions of the impact of grouping structures on gifted and high achieving students. The survey instrument was designed by Rimmer (2010) and used in the dissertation *Teacher perceptions of the impact of heterogeneous grouping on improving student achievement*.

Within the schools, because of the middle school concept of teaming, students were divided onto academic teams. In each grade, there were inclusion teams and accelerated teams (which were sometimes one in the same). The schools employed a rating system of 1 to 4 to evaluate behavior and academic achievement of each rising student. Based upon teacher evaluations, students were separated into an even distribution of 1s, 2s, 3s, and 4s onto various teams. The premise behind this was to ensure equity in behavior and academics across teams.

All gifted students were served within a cluster grouping model, as there was not a large enough population to have a completely homogeneous gifted course. However, within the past three years, an acceleration model had been incorporated on the middle school campuses that offered a high school credit in science, math, and reading and language arts. Though these classes were not homogeneously gifted, they were exclusive to gifted and high-achieving. For the purpose of this study, these accelerated classes will be considered homogeneously ability grouped.

For comparison, gifted and high-achieving students were redistributed with other team members for other academic classes that were not accelerated. These courses were considered heterogeneously grouped, even though some gifted students were with the same gifted peers in a cluster group for the entire academic school day. For this study, the researcher intended to analyze the data from students who were involved in the homogeneously grouped classes compared to students who were in heterogeneously grouped classes for the same content area.

For example, in eighth grade, there was a gifted math team and a gifted language arts team. On the gifted math team, the gifted students had access to an accelerated math and science class, but had a heterogeneously grouped language arts class. Alternately, on the gifted language team, the gifted students were involved in a homogeneously grouped language arts class, but then had heterogeneous classes for science and math. It was the intent of the researcher to analyze how and if these differences made an impact on student achievement and teacher perception. The students were analyzed as either homogeneously accelerated or heterogeneously grouped within various content areas for the purpose of the study.

Limitations/Delimitations

Some limitations of the study that could have potentially impacted the results of the study could be the bias of the researcher towards ability grouping, which is favorable. Another limitation was the reliance upon voluntary participation of the survey by the participants. A delimitation of the study was having access to the information as a member of the faculty of one of the middle schools involved in the study.

Definition of Terms

Though the research questions of this study involved heterogeneous versus homogeneous grouping structures, oftentimes the distinction is not precise. There are numerous ways to classify groups and there are often areas of overlap between heterogeneous and homogeneous classification. For this reason, it is imperative to understand the terminology related to the topic, particularly as it applies to gifted and high achieving students.

Definitions

- Ability grouping – “Ability grouping, or homogeneous grouping, is the separation of same-grade school children into groups or classes that differ markedly in school aptitude” (Kulik, 1992, p. 9).
- Between-class grouping – “a school's practice of separating students into different classes, courses, or course sequences (curricular tracks) based on their academic achievement” (NEA, 2015, para. 4).
- Cluster grouping – “Several high achieving, high ability, or gifted students in a regular classroom with other students and a teacher who has received training or has a desire to differentiate curriculum and instruction for these ‘target’ students” (Gentry & MacDougall, 2009, p. 3).
- Collaborative Learning (CLL) - A teaching method that is focused on the outcomes of a group, and not the harmonious agreement with the group members. The emphasis here is on the process of negotiating. CLL consists of less structured tasks than cooperating learning and the expectation is that participants will take on more ownership and autonomy of tasks performed within a small group setting (Kato, 2016).
- Cooperating Learning (COL) - A teaching method that uses highly structured tasks, ensures each member contributes to the group, encourages teamwork and avoids “free-riders” within a small group setting (Kato, 2016).
- Flexible Grouping - “Flexible grouping is the practice of varying grouping

strategies based on short-term learning goals shared by the students, then regrouping once they meet their goals. Students can work in partners, in student- and teacher-led small or large groups, or as a whole class" (Ontario Ministry of Education, n.d., 2009, p. 1).

- Gifted Student – "a student who demonstrates a high degree of intellectual and/or creative ability(ies), exhibits an exceptionally high degree of motivation, and/or excels in specific academic fields, and who needs special instruction and/or special ancillary services to achieve at levels commensurate with his or her abilities" (Georgia Association for Gifted Children, 2014, para. 1).
- Grouping – "the practice of establishing classes of students based upon some specified criteria" (Froman, 1981, p. 3).
- Heterogeneous grouping – "untracked or mixed ability classes" (Loveless, 1998, p. 5).
- High achieving (or Bright) student – a student that is interested, attentive, completes assignments, performs in the top group, works hard, is alert, enjoys school, and learns with ease (Szabos, 1989).
- Homogeneous grouping – See Ability grouping
- Pull-out grouping – Gifted students are removed from different classes and meet as one class on a regular basis for accelerated instruction. This is popular at elementary levels of education (Sousa, 2009).
- Within-class grouping – "a teacher's practice of putting students of similar ability into small groups usually for reading or math instruction" (NEA, 2015, para. 4).

Summary

The purpose of this study was to delve into teacher perceptions and data related to the impact of grouping structures on gifted and high achieving middle school students, particularly in regards to student achievement and behavior. There was a need for this study to glean information about teacher perceptions, to add to the literature regarding gifted and high achieving middle school students, and to better inform stakeholders in the best grouping structures for meeting the needs of gifted and high achieving students. The study took place in a rural school district in South Georgia and incorporated qualitative and quantitative data collected from the two middle schools found in the district.

CHAPTER II

LITERATURE REVIEW

Introduction

A group consists of two or more people located together, acting together, or placed together for a common purpose. Be it a partner, a small group, or a whole class, students are exposed to grouping structures that are detrimental to their educational development. Since learning does not exist in a vacuum, or on a solitary island, it is important to understand how teachers can best serve their students and encourage them to reach individual potential.

There are many factors that contribute to student achievement; how students are grouped together is certainly one of them. The debate over whether students should be heterogeneously grouped versus homogeneously grouped has been around for decades. While there is legislation in place to ensure that each student receive an equal education, how is equality and equity established when classroom configurations can be so different? What role does the environment, and more specifically, grouping, play on the educational quality of gifted and high achieving students? To extend that line of questioning, how does the teacher perspective on grouping structures affect the classroom environment?

All of these questions stem from the desire to best serve students and increase student achievement. A review of the literature related to the topic of teacher perceptions of grouping structures of middle school students yields many studies, though there is less information about grouping effects specifically on gifted and high achieving students. As mentioned, homogeneous versus heterogeneous grouping has been a long debated topic in education, with many positives and negatives on both sides of the argument, but how do teachers perceive the impact of this debate on gifted and high achieving students?

“Intellectual ability is only potential energy. Unless made kinetic, it is of little avail to the promising individual” (Stanley, 1989, p. 193). How can teachers ensure that they are assisting gifted and high achieving students in meeting individual potential within a classroom setting? What do teachers perceive as the classroom setting that provides the best environment for this task?

It was the goal of this study to analyze how teachers perceive homogeneous and heterogeneous grouping structures and how they impact gifted students in middle school. The purpose of this chapter was to review the literature that has been researched and published about this topic. The topic of ability grouping has been well-researched and studied over the years. Kulik’s initial meta-analysis uncovered more than 700 studies regarding tracking and ability grouping (Loveless, 1998). However, Plucker and Callahan (2014) pointed out that much of the meta-analysis conducted on ability grouping is from many years ago, and may not be as relevant today. Since teacher training has been modified to include differentiation, instruction within grouping structures may look different than it did in the 1980s, when the major meta-analyses were conducted, and which included data from even older decades (Plucker et al., 2014). There is still much that needs to be studied in this highly debatable topic.

Theoretical Framework - Social Comparison Theory

In Social Comparison Theory, Festinger (1954) postulates that “while opinions and abilities may, at first glance, seem to be quite different things, there is a close functional tie between them. They act together in the manner in which they affect behavior” (p. 1). This has implications for the entire spectrum of education: teacher opinions, student abilities, and classroom behaviors.

According to the Social Comparison Theory, “People...tend to move into groups which, in their judgment, hold opinions which agree with their own and whose abilities are near their own” (Festinger, 1954, p. 13). This could be an argument for homogeneous grouping, since it is human nature to want to be in groups of individuals with similar abilities.

On the other hand, subgroups within a population can create pressure to assimilate with the rest of the group (Festinger, 1954). For example, a lower-performing group of students may be pressured to assimilate within a higher-performing group of students. This could be an argument for cluster grouping within heterogeneous groups. Therein lies the debate: which grouping structure is most beneficial for students, particularly those with exceptionalities?

In a qualitative study exploring teacher beliefs and use of acceleration, ability grouping, and formative assessments, Missett, Brunner, Callahan, Moon, and Azano (2014) found that teacher beliefs about student abilities were reflected in individual and group pacing practices. Teachers believed that they group students and moved them at appropriate readiness levels. The exception to this was when teachers slowed the class pace down to accommodate the needs of lower level learners.

This statement supports Festinger’s theory that opinions and abilities can affect behavior. It is important to be aware of the influence that opinions and abilities can have within a group, and more specifically, how teacher perceptions and opinions can influence student behavior. For this reason, the topic of teacher perceptions of student grouping is relevant and applicable to all in the education profession. In order to improve instructional practices for gifted students, it is necessary to analyze how teacher opinions can influence classroom dynamics. As Missett et al. noted: “Clearly, the beliefs teachers bring with them regarding…student ability affects choices they make in the classroom” (p. 264). This observation makes a direct connection to Festinger’s theory. Social Comparison Theory plays a major underlying role in motivation and the implications for grouping structures, particularly for gifted and high achieving students.

Ability Grouping

“The ultimate purpose of all ability grouping strategies is to match appropriate academic challenges and learning opportunities in a manner that is commensurate with one’s ability level” (Yun Dai & Chen, 2014, p. 68). Is heterogeneous grouping of students harmful to the gifted and high achieving student, or does it serve as a beneficial environment for growth? Before being able to fully analyze the implications of grouping for the gifted and high achieving, one must have an understanding of the history of ability grouping.

Social Background of Ability Grouping

The idea of ability grouping “is one of the oldest and most controversial issues in education” (Slavin, 1987, p. 293). From the early days of American education, there has been grouping in schools; students of all ages were grouped together in a one-room schoolhouse. During the 19th century, less than eight percent of the population attended high school. This was for more affluent students; the majority of students ended their education by the eighth grade (Loveless, 1998). The notion of homogenization of classes began around the mid-19th century and was the prevalent class arrangement until the early 1930s (Froman, 1981; Keller, 2011). According to Kulik (1992), one of the first studies on grouping occurred in 1927 in Salt Lake City. At the start of a school year, two groups of elementary school children were divided into homogeneous and heterogeneous groups. By the end of the year, the students in the homogeneous group outperformed their heterogeneously grouped peers.

In 1981, Froman attempted to analyze all of the research that had been conducted on grouping since the 1920s. There were numerous issues with control groups, and many studies had to be abandoned as inaccurate. Slavin (1987) also attempted to analyze studies from the 1920s. At that time, school systems were placing students into groups that prepared students for future vocations. Placements were made based upon past achievements and teacher recommendations. Because of the “mental testing movement” (Kulik, 1992, p. 10) of the 1920s, many studies were conducted that resulted in positive results for grouping practices.

In the 1930s, homogeneous grouping declined because of a negative impression due to John Dewey’s Progessive Education Movement and in the 1940s because of research supporting little benefit to student achievement (Taylor, 2007; Yun Dai & Chen, 2014). “Reviews of the time reported that students learned less and also declined in self-concept and leadership skills in grouped classes” (Kulik, 1992, p. 10).

Ability grouping fell back into favor during the 1950s with the onset of the Cold War, Sputnik, and an increased demand for science and mathematics achievement. New studies focused on aptitude and noted that students made greater gains when in enriched and accelerated classes. Educational equity concerns arose in the 1960s, and with those concerns came a focus on the detriments of ability grouping. Since then, there has been a major focus in education on analyzing grouping structures (Kulik, 1992).

During the 1990s and 2000s, the focus grew to incorporate differentiated instruction and personalized instruction in an effort to achieve equity and excellence for all students (Tomlinson, 1999). An emphasis on heterogeneous class structures, offering more inclusion for special education students and less specialization for gifted education students, called for a need for more responsive teaching that provided differentiation based upon interest, readiness, and learner profiles (Tomlinson, Brighton, Hertberg, Callahan, Moon, Brimijoin, Conover, & Reynolds, 2003). Though responsive teaching and differentiated instruction is the most effective means of teaching, it is difficult and time-consuming. “It is the case that, currently, few teachers make significant changes to teaching and learning routines in response to learner variance” (Tomlinson et al., 2003, p. 135). This creates a gap between theory and practice.

Because there is a gap between theory and practice in regards to differentiation, “a major concern of advocates is that the regular classroom environment, in the absence of interventions for advanced students, provides little challenge for students who…can learn the material at an above-average pace” (Plucker & Callahan, 2014, p. 393). So what is the best way to meet the needs of gifted and high achieving students, and does grouping structure contribute to their success or lack thereof? It was the purpose of this study to gain some information and insight into this particular issue.

Legal History

The debate over student grouping has often ended up in a courtroom. Whether it is the issue of ability grouping as a discriminatory practice against race, minority, socioeconomic status, or disability, most of the following cases address the segregation that is caused by such ability grouping.

Arguably the most notable case in U.S. education history, *Brown et al. v. Board of Education of Topeka et al.*, brought the issue of segregation to the forefront of society. This landmark case in 1954 overturned the racially discriminatory “separate but equal” determination of Plessy v. Ferguson. The Supreme Court passed judgment on the final decision and began a national movement of desegregating schools. Many following cases refer back to this turning point in American history.

In 1967, Julius Hobson brought forth a suit against his district’s superintendent in Washington, D.C., claiming that the school was depriving children an equal education based on race and poverty stating that “ability grouping is by definition a classification intended to discriminate among students, the basis of that discrimination being a student's capacity to learn” (para 512). The court ruled in his favor, and *Hobson v. Hansen* (1967) served as another example of racial discrimination in school practices being denounced.

In another case of failed integration, *Spangler v. Pasadena Board of Education* (1970) addressed the issue of ability grouping and segregation. It was noted, “The racial effect of the grouping procedures generally in use in the District is to increase segregation” (para 47). Though the court noted the issues of grouping within the school, no declaration was made directly on grouping; instead, the court deemed the lack of integration unconstitutional and required the school board to adjust their efforts.

In *Singleton v. Jackson Municipal Separate School Dist.* (1970), numerous school districts were found operating under a binary school system and, based upon the ruling, were ordered to change to a unitary system of education. While the districts had previously been freedom of choice districts, the case found this to be unconstitutional and moved that all districts become desegregated. This case was referenced and the ruling upheld in the similar claim of *Lemon v. Bossier Parish School Board* (1971). In another instance of freedom of choice proving ineffective in desegregation, *Moses v. Washington Parish School Board* (1971) ruled that upon integrating schools, the policy on-campus of homogeneously grouping students by ability was continuing to underserve the minority population of the district. This was decreed as a violation of the Fourteenth Amendment, and the district was ordered to do away with the policy.

Wealth discrimination became the focus of *San Antonio Independent School Dist. v. Rodriguez* (1973), when Mexican-American parents brought forth a suit against the district. Though the US Supreme Court struck down the property tax that perpetuated wealth discrimination within the district, the federal government did not get involved in school policy and allowed decisions to remain on the local and state level. In 1974, non-English-speaking Chinese students brought forth another case that ended up in the Supreme Court. *Lau v. Nichols* ruled in favor of the 1800 students who were receiving no instruction based on their inability to understand English. The district was ordered to take steps to improve instruction for the large number of students.

When segregatory practices against racial minorities were justified as ability grouping, *McNeal v. Tate County School District* (1975), decreed that no practices that perpetuate past discrimination was allowed. Ability grouping itself was not outlawed, as the court ruled that as long as there was not a racial method of assignment, ability grouping was not constitutionally forbidden. Citing the former case, in *Morales v. Shannon* (1973/1975), the Court of Appeals overturned the initial ruling of the district court that declared that current grouping practices were of no segregatory intent. This ruling was found to be clearly erroneous.

In *United States v. Gadsden Cty. Sch. Dist.* (1978), the system of ability grouping was found to be a racially discriminatory practice. The district was ordered to submit a new plan of student organization that would not segregate students by race or ability grouping. Another case that addressed the "racially and ethnically discriminatory criteria and resulted in impermissible classroom segregation" (para 992) was *Castaneda v. Mrs. A.M. "Billy" Pickard* (1981). Along with having an ability grouping system and employment practices that discriminated against Mexican-Americans, there was a lack of a bilingual education program that would assist students in achieving within the district. Though the case was originally ruled in favor of the defendant, in appellate court the verdict was "affirmed in part, reversed in part and remanded" (para 1016).

In *Anderson v. Banks* (1981), the diploma policy was the issue. Due to an unfair exit examination and a system of tracking, many students were "misclassified as mentally retarded" and kept in a low track that ill-prepared them to pass the test. Defendants were ordered to administer diplomas to students who would have received one for the exception of the test.

The National Association for the Advancement of Colored People (NAACP) sued the State of Georgia in 1985 in *NAACP v. Georgia*. The claim was that the state's policy of assigning black children to regular classes and educable mentally retarded (EMR) classes was discriminatory and violated the Thirteenth and Fourteenth amendments. The initial verdict ruled in favor of the defendants and was upheld in appellate court. The final verdict did conclude that the "defendants violated a number of procedural regulations passed pursuant to the Rehabilitation Act and misinterpreted the state I.Q. score regulation. On remand, the district court is directed to grant appropriate relief on these claims” (para 1429).

Once again, the segregatory practice of ability grouping, the disproportionally high number of minority students in EMR courses, and the lack of diversity on faculty were under examination with *Montgomery v. Starkville Municipal Separate School District* (1987). The court ruled in favor of the plaintiffs and ordered that the district revise entrance examinations and policy.

In *Quarles v. Oxford Municipal Separate School District* (1989), the appellants argued that the initial ruling was erroneous and that there was still segregation existing in grouping, discipline, employment, and extra-curricular activities. This was a nineteen-year-old school desegregation suit, but the district was not found to be utilizing illegal practices. This case went to the defendants in district court and was affirmed in appellate court.

In 1994, *Simmons on Behalf of Simmons v. Hooks,* the court did find that the practice of ability grouping was segregatory and ordered that the system be ceased for the next school term. But in *People Who Care v. Rockford Bd. of Educ.* (1997), and *Holton v. City of Thomasville* (2005/2007), neither district nor appellate courts found the ability grouping present to be an obvious attempt at segregation, thus ruling in favor of the school districts.

Though much of the legal confrontations regarding grouping practices are in the past, there is still much debate over the benefits and detriments of particular grouping structures.

Legislation Related to Grouping

In 1931, the Section on Exceptional Children and Youth was the first federal program to acknowledge the learning needs of special education students, including gifted children. In 1950, The National Science Foundation Act provided resources and funding for math and science instruction; this resulted in high-achieving students receiving the benefits of the funding. Following that, in 1957 the National Defense Education Act brought more funding for math, technology, and science curriculum for high achievers. The Elementary and Secondary Education Act (ESEA) came about in 1965 and expanded government influence on state policy. This law provided funding for districts of low-income students and attempted to improve the quality of education for all (Jolly & Robins, 2016).

In the 1970s, there was more legislation that came about to specifically assist and address gifted and special education. The Marland Report of 1972 established the first definition of giftedness federally, examined the state of gifted education, and made recommendations for future gifted programming. In 1978, grant money was made available for teacher training and improving gifted and talented programming with the Gifted and Talented Children’s Education Act. The Education for All Handicapped Children Act of 1970 and Individuals with Disabilities Education Act of 1975 brought an emphasis on students with learning disabilities. States became responsible for gifted education funding in the 1980s, with the Elementary and Secondary Education Consolidation Act of 1981. The Jacob K. Javits Gifted and Talented Children and Youth Education Act of 1987 provided more funding for minority gifted children and studies to analyze best practices in gifted education (Jolly & Robins, 2016).

Additional legislation that made a concerning impact on gifted education was No Child Left Behind (NCLB) in 2001. While the aim of the act was to enforce that all students reached mastery, this meant that teachers had to focus more on equity and proficiency, and not excellence (Jolly et al., 2016). Whereas equity deals with meeting the needs of all, typically the focus falls on below-average students in an effort to help them achieve a minimum. At times when equity is the national focus for education, excellence takes a back seat and the needs of gifted students go unaddressed (Colangelo & Davis, 1991; Vantassel-Baska, 2006). Supporters of gifted and talented education were worried that NCLB policies had negative and detrimental effects on high achieving learners (Schwartz, 2016).

The American Recovery and Reinvestment Act of 2009 provided for Race to the Top (RT3), a federal fund of $4 billion intended to support school improvement nationally. The State of Georgia participated in RT3 and received $400 million in grant money for programs designed to implement change in recruiting and retaining quality teachers and school leaders, improving data systems, reorganizing failing schools, and focusing on standards and assessment (Georgia Department of Education, 2015). The grant period started in 2010 and ended in 2014. It was over this four year period that systematic reforms were implemented across the State of Georgia. College and Career Readiness Standards, a statewide longitudinal data system, a growth model for students (instead of strictly performance-based assessment), a new teacher/leader evaluation system, and a revamped, more rigorous end of year assessment tool, the Georgia Milestones, were introduced over this course of time (Georgia Partnership for Excellence in Education, 2014).

Forty low-performing schools were specifically targeted for turnaround efforts, and as of 2014, ten of those schools have been removed from the lowest performing schools list. Additionally, efforts at improving student performance and outcomes has yielded positive results: graduation rates have increased by 5% from 2011 to 2014 and there has been an increased interest in post-secondary education, as the number of students taking the SAT and ACT have risen. Science Technology Engineering and Math (STEM) initiatives were put in place in an effort to bolster interest in these areas and prepare students for a global market, which has an increasing need to fill STEM careers. Ultimately, rigor was increased for all students. RT3 started a necessary and beneficial change in school reform for Georgia, and it is recommended that additional measures be taken to ensure that improvement continues (Georgia Partnership for Excellence in Education, 2014).

The NCLB and RT3 were replaced by the Every Student Succeeds Act as of December 10, 2015, when President Obama signed it into law. According to the U.S. Department of Education (2016), this reauthorized law focuses on higher standards for all students and places an emphasis on college and career readiness. The priority is on both excellence and equity and is an effort to bring the focus of education back to achievement for all. Perhaps this legislative shift will make gifted and talented supporters grateful, because, as Sousa (2009) stated, “We must take great care to ensure that while we leave no child behind, we do not prevent a child from moving ahead” (p. 238).

Another platform that has been implemented in Georgia to improve accountability and rigor in schools is the College and Career Ready Performance Index (CCRPI). The intention of CCRPI is to improve communication for stakeholders and ensure college and career readiness in all public schools in Georgia. CCRPI is an annual measure assigned to a school based upon performance in four areas: achievement, progress, challenge points, and achievement gaps (GADOE, 2015).

The Georgia Student Growth Model (GSGM) is one of the initiatives that came about because of RT3. The purpose of the GSGM is to analyze another aspect of student progress aside from achievement and provides a more holistic presentation of how a student has progressed over the course of a school year. GSGM compares a student with similar-performing peers on the end of year assessment and is able to express how much growth a student has displayed, regardless of how a student performs academically in achievement measures. The GSGM is linked to CCRPI and results influence a school's performance. These data provide stakeholders with a more complete representation of student progress (GADOE, 2015).

With the implementation of RT3, CCRPI, and GSGM, there has been a shift in defining what educational success looks like in Georgia. This increase in rigor and accountability measures could have repercussions for gifted and high achieving students.

Major Contributors

When analyzing the great debate over grouping, one would be remiss without mentioning the names Kulik, Slavin, and Oakes. Each has played a role in analyzing and defining aspects of grouping in modern education.

James Kulik and Robert Slavin are known for completing the most comprehensive meta-analyses of the research at their respective universities. "These meta-analyses show that different grouping programs produce different effects" (Kulik, 1992, p. 11). With nearly one hundred studies analyzed between the two meta-analyses, the different men uncovered similar results:

Our meta-analyses at Michigan covered 51 separate studies of XYZ classes, and

> the Johns Hopkins analyses covered 47 studies. Both analyses reached the same conclusion about lower and middle ability students: These students learn the same amount in XYZ and mixed classes. The evidence from the higher aptitude groups was less clear. (Kulik, 1992, p. 11)

Though the results may have been similar, the opinions of the men vary. Slavin (1986) stated, “Students' primary identification should be with a heterogeneous class” (p. 76) as one of his recommendations for educators and advised against homogeneous classes unless appropriate. Kulik (1993), however, stated “American education would be harmed by the wholesale elimination of programs that group learners for instruction by ability” (p. 9). Furthermore, In Kulik and Kulik’s (1991) meta-analysis of ability grouping, the researchers found that “the evidence is clear that high-aptitude and gifted students benefit academically from programs that provide separate instruction for them” (p. 191). Additionally, they went on to take a stance opposite Oakes and Slavin in regards to accelerated and separate courses for gifted and high achieving students (Kulik et al., 1991).

While meta-analyses of grouping studies is linked to Kulik and Slavin, the de-tracking movement is synonymous with Jeanie Oakes's (1985) and her book*, Keeping Track: How Schools Structure Inequality*. “Oakes book was instrumental in igniting a firestorm of anti-tracking activity” (Loveless, 1998, p. 14). While many found her text to be instrumental in reversing grouping practices, not everyone agreed with her viewpoint. Kulik (1992) claimed "Oakes's conclusions, however, are based on her own selective and idiosyncratic review of older summaries of the literature and on her uncontrolled classroom observations" (p. 42). He goes on to say:

> Whereas Oakes believes that grouping programs are unnecessary, ineffective, and unfair, I conclude that the opposite is true. American education would be harmed by the elimination of programs that provide instruction adapted to the aptitude, achievement, and interests of groups with special educational needs. (p. 42)

Current Debates

According to the National Education Association (NEA), there are two most common forms of ability grouping, within-class grouping and between-class grouping. Within-class grouping involves heterogeneous whole class that is then subdivided into small-groups based upon ability. Between-class grouping involves a homogeneous classroom setting of students based upon academic ability. While supporters of ability grouping claim that it allows teachers the opportunity to adjust instruction at a better pace to meet student needs, opponents fear that it creates broader achievement gaps by channeling lower performing students into classes with lower expectations (NEA, 2015).

The National Education Association is not a supporter of ability grouping and believes that all academic tracking should be eliminated from public schools, particularly when perpetuating discrimination based upon race, ethnicity, socioeconomic status or gender (NEA, 2015).

While the National Education Association deals with national opinion, what about international perspectives? Some say that international standardized tests paint a negative picture of the current state of the public school in America. For example, according to the Programme for International Student Assessment (PISA) in 2012, the United States performed below average for mathematics. Of the 34 nations involved in the assessment, the United States ranked 27th in mathematics. While reading and science both scored close to the average, the ranking of 17 and 20 in reading and science (respectively) is far from the top of the list. These results are not favorable when considering that the United States spends more money per student than most other countries.

Though there is a purpose and an interest in international test results, there are so many variables that affect results that it is often a case of comparing apples to oranges. As Husen (1983) stated, "Comparing the outcome of learning in different countries is in several respects an exercise in comparing the incomparable" (p. 455). That being said, it is relevant to the literature on grouping to analyze international perspectives on the topic.

International Perspectives on Grouping and Gifted

According to the International Review of Curriculum and Assessment Frameworks Internet Archive (INCA, 2010), there are a variety of ways that school systems are structured internationally. There can either be an unitary system of schools for all students, known as comprehensive, a system of schools that provide different schools for different educational paths and aptitudes, known as select, or a system that offers both types of schools, both comprehensive and select, known as mixed. From primary through upper secondary, the United States has comprehensive schools. This is not the case internationally.

Countries that have separate schools for different educational aptitudes at the upper secondary level (e.g. college prep versus vocational) include France, Germany, Hungary, Italy, Switzerland, Japan, Korea, and Singapore (O’Donnell, Sargent, Byrne, & White, 2010).

According to INCA (2010), these countries have only select options for school choice at the upper secondary level. Meanwhile England, Northern Ireland, and the Netherlands offer mixed schools in their lower secondary and upper secondary systems.

This means that countries with mixed and select schools have a level of homogenization on a school level that surpasses the individual classroom grouping debate of the United States. However, it must be noted that even if there is a common structure for schools, there are usually differentiated curriculum offered to meet varying abilities and interests, particularly for secondary schools. Also, some of the data may refer to specific districts, states, or provinces from which the information was collected, and may not be representative of a national position on grouping (O'Donnell et al., 2010).

How students are assigned to schools that have a select system varies. Northern Ireland has had selection criteria in the past for secondary education. Students would take a test at the end of primary school that would determine which school they would attend for post-primary education. As of 2010, there are no more "transfer tests," but schools now have recommended criteria that are Government provided (O'Donnell et al., 2010).

When compared to the actual PISA assessment for test data in 2012, France, Germany, Hungary, Italy, Switzerland, Japan, Korea, and Singapore outperformed the United States when it came to the "percentage of 15-year-old students performing at PISA mathematics literacy proficiency levels" (OECD, PISA, 2012). All of these countries are reported as operating under a select school system.

The implications that this has for classroom grouping structures are huge. What is the best way to group students for maximum growth, achievement, and support? The debate over grouping is not exclusive to schools in the United States.

In China, "although the practice is illegal, most, if not all, high schools in China track students on the basis of academic ability judged primarily by their test scores"

(Mingming et al., 2014, p. 537). These students are then placed into magnet and regular classes. According to PISA (OECD, 2012), Shanghai-China has the highest-achieving scores in reading and mathematics in the world.

Victorian schools in Great Britain were intended for students 5-14 and expected all within the single room building to progress by a certain standard each year. After World War II, schools grew in number and size, and tracking (called streaming in the United Kingdom) became the preferred method of school structures. Tracking was the standard form of student organization in the 1940s and 1950s in Britain, but they moved away from tracking in the 1960s when results indicated that it may not be beneficial socially. Mixed ability grouping became popular in the 1970s and 1980s in secondary schools. And the Education Reform Act of 1988 further increased the analysis of instructional practices. However, recently Great Britain has seen a return to ability grouping of students (Sukhnandan & Lee, 1998).

Not everyone is in favor of this return to ability grouping. After conducting a study on grouping for the University of Sussex in which mixed-ability groups of students outperformed ability groups, Boaler (2007) noted:

> In England we use more ability grouping than possibly any other country in the world, and children are put into groups at a very young age. It is no coincidence that our society also has high levels of anti-social behavior and in discipline. Children who are put into low sets in school quickly learn to view themselves as unsuccessful and develop anti-school values that lead into general anti-social behavior. (p. 1)

In England, like in America, grouping is still a much contested topic.

Finland, often referred to as the point of reference in measuring educational success, does not employ ability grouping in its schools. Since the 1970s, Finland has been attempting to equalize education for all students. One way of doing this was by eliminating ability grouping and high-stakes testing (Darling-Hammond, 2010). It should be noted that Finnish science classes for grades seven through nine are capped at sixteen students and that all teachers are required to have a Master's degree, which could have an effect on student achievement (Abrams, 2011).

In Canada, there was a previous system of academic versus vocational schools. At this point, most secondary schools are composite, offering academic and vocational classes for students (O'Donnell et al, 2010). According to the Ontario Ministry of Education (n.d.), flexible grouping is encouraged, within a heterogeneous class context. A tutorial about flexible grouping distributed by the DOE stated:

> The small- and large-group design should consider homogenous groups (e.g., high achievers with high achievers) versus heterogeneous groups (e.g., high achievers with low achievers) both of which create different group dynamics and different results. Homogenous groups allow for collaborative thinking and greater cognitive interaction. Heterogeneous groups create optimal learning opportunities for some while others profit from hearing well-reasoned explanations. (p. 1)

This approach to grouping is supported by the research on within-class ability grouping.

When it comes to grouping the gifted, there are many different approaches internationally. In Germany, there are several models of gifted programming, though there is not a mandatory national strategy. Public schools in south and east Germany have institutions for high achieving students, whereas schools in the north and west rely on programming within regular schools. Throughout the country, high achieving children are able to start school early (before the regular school age) and have the ability to skip classes (Fischer & Müller, 2014).

In Singapore, there has been an effort at programming and identification expansion over the past decade. Nonacademic gifted talents such as dance and music are identified and developed in specialized programs. There has also been an effort to expand programming into all schools in Singapore, instead of focusing solely on top-performing students. There are many options for gifted students that include, but are not limited to, enrichment, accelerated courses, camps, and competitions. The focus within gifted education is to provide structure and open-ended opportunities for students in order to encourage critical thinking and life-long enjoyment of learning. The main goal is to develop high level thinking and intellect while nurturing creativity in gifted pupils (Neihart et al., 2013).

In Switzerland, though there is not a mandatory national policy in regards to gifted education, many school districts are aware of the importance of having quality gifted programming and require it at schools. This does not happen everywhere and results in ongoing controversy. There is a need for highly qualified gifted educators. In order to encourage excellence and achievement, many schools are attempting to change conditions for gifted students by creating more individualized learning paths through differentiation and potential-oriented learning (Mueller-Oppliger, 2014).

In Peru, there have been inequalities related to income distribution and educational access between developed regions and indigenous populations (Blumen, 2013). Various efforts have been made to try and promote equal access to education.

Practices included ability group clustering for primary school grades and, for high school students, enrichment was offered through International Baccalaureate Organization schools, which offer Advanced Placement classes. Though teacher training programs have improved, an analysis of gifted education in Peru done by Blumen (2013) recommended:

> it is of utmost importance to improve our understanding about talent development under ethno-linguistically diverse and poverty contexts. Formal lineaments of talent promotion are needed, with the commitment of civil society, and the policy makers, involving the participation of the enterprises and colleges/universities, supporting talent development with social responsibility. (p. 360)

Australia has been estimated of having 98% of their schools involved in tracking of some sort (OECD, 2012). Johnston and Wildy (2016) point out that there is a need, in Australia, to focus less on the needs of the higher-performing students and more on the needs of the lower-performing students and the effects of tracking, attributing many U.S. researchers for their work with lower-performing students.

Though this serves as only a small sampling of gifted and grouping structures from around the world, the purpose of this section is to demonstrate how grouping structures and gifted programming are a current-day, debatable topic internationally.

Grouping Structure and Gifted Programming

Segregation is good for the gifted and possibly bad for some others, but the

> negative effects are sometimes stronger. This presents a serious moral dilemma. Adequately serving the more able student's need for intellectual peer contact may be accompanied by an educational disservice to slightly less able students. This is one of the two main objections to ability grouping for the gifted; the other is that they might develop elitist attitudes, but this has not been supported. (Shore, Cornell, Robinson, & Ward, 1991, p. 86)

Types of Grouping Structures

Through interaction, individuals learn. There is no denying that working with others can have a positive benefit on generating and sharing ideas, allowing for opportunities of collaboration, and providing teachable moments. The following sections describe the different types of grouping structures.

The partnership. The smallest grouping structure is a partnership. This can be something as simple as "Share with your neighbor" to as advanced as semester-long computer programming partnerships. A partnership, by definition, insists upon the two individuals sharing ownership, and is a frequently used grouping structure found in middle school classrooms. There are programs designed to rely upon peer-based instruction that have yielded positive results.

Pair programming is "a collaborative form of programming in which two people work side by side at one computer" (Denner, Werner, Campe, & Ortiz, 2014, p. 277). In a study involving 325 middle school students enrolled in an elective game programming course, Denner et al. (2014) discovered that middle school age students may benefit from having partners because the familiarity and comfort that is developed in a partnership can result in greater learning. Using pretest and posttest surveys and a performance assessment, researchers were able to determine that pair programming was beneficial for all but one partner group of students.

While the researchers of this study placed more of an emphasis on the programming component, there are several implications that can be applied to middle school grouping strategies. The researchers suggest that pairing students is an effective strategy for instruction, but it is the responsibility of teachers to create effective pairs. However, pair programming is not the only instance of partner pairing being beneficial for students.

Peer Assisted Learning Strategies (PALS) is a paired reading, peer tutoring program for grades K-6. According to What Works Clearinghouse through the U. S. Department of Education (2012), “PALS was found to have potentially positive effects on alphabetics, no discernible effects on fluency, and mixed effects on comprehension for beginning readers” (p. 1). The research included 3,130 readers in kindergarten and first grade across several states. Though this study yields positive results for beginning readers, there are high school versions of the program available. There are many benefits of Peer Assisted Learning at any age, “such as reciprocity among students, improved study habits, persistence on task and increased exam performance,” (Copeland Solas & Wilson, 2015, p. 87).

Having partners can be beneficial for students in many learning situations. Partners allow students the opportunity to share, discuss, debate, and encourage. There are downfalls of partnerships as well: inequity in work, motivation, and collaboration (Denner et al., 2014). All in all, this is the most basic student grouping structure; groups only get larger and more complex from here.

The small group. Small group generally consists of three to six students who are responsible for working together in some aspect. This could be a small group based upon ability and interest, or a random assortment of students. The purpose of the small group could be for differentiated instruction, cooperative learning (COL), or collaborative learning (CLL). Small group instruction has been shown to improve areas of grammar, vocabulary, writing, and is particularly useful for English Language Learners (Kato, 2016). Teacher led small group has the primary purpose of differentiating curriculum and instruction based on student needs for various performance levels (Hollo & Hirn, 2015).

The whole group. Whole group instruction consists of the teacher delivering information to the entire classroom of students at once. Whole class teaching “can be used to honour (sic) a variety of ideas, to help students develop their thinking or to demonstrate the value of mistakes for learning…to provide feedback and allow further discussion” (Mitchell, 2014, p. 43). Though this presentation method has sometimes been referred to as “the sage on the stage,” whole group instruction is a necessary delivery method for certain material when all students need to be addressed. The whole group format is often an effective use of time and resources (Hollo et al., 2015).

When it comes to the types of grouping structures that occur within classes, there are implications for behavior. One of the benefits of small-group formats as compared to whole class and individual work is that students are more engaged in the academic tasks at hand (Downer, Rimm-Kaufman, & Pianta, 2007; Stright & Supplee, 2002). Based on their observations from an exploratory analysis on within-class grouping structures on teacher and student behaviors, Hollo and Hirn (2015) found that middle school teachers are more likely to engage in whole-group instruction versus small group. In an effort to increase student engagement, they make the recommendation that teachers increase small groups as an instructional strategy instead of using the traditional format of whole group lecture followed by seatwork.

According to Tomlinson (2015), as classrooms have become more heterogeneous, it is important to address several management issues that impact student behavior. The most effective classrooms offer a climate that is learner-centered, knowledge-centered, instruction-centered, community-centered, and assessment-centered.

Homogeneous Versus Heterogeneous Grouping

There has long been a debate on the benefits and detriments of ability grouping and tracking in educational practice. Supporters of ability grouping within a homogeneous setting claim that such an environment allows for better pacing, promotes achievement, and through acceleration, shows the largest student gains of any academic construct. Detractors of ability grouping, or tracking, say that the practice perpetuates race and class stereotypes, harms self-esteem, and traps students into a self-fulfilling prophecy of being underachievers (Loveless, 1998). Within-class ability grouping (cluster grouping) has been found to be beneficial by supporters of both sides. The following is an analysis of studies conducted on the topic of ability grouping.

Homogeneous grouping. The premise of homogeneous grouping is to put like ability with like ability. Many studies draw the conclusion that ability grouping has benefits for students. Some of these observations maintain “researchers have found that ability grouping benefits students at all ability levels” (Matthews et al., 2013, p. 82). Specifically, there is an argument for gifted students to be homogeneously grouped. Many argue that “gifted students need to work at higher instructional levels and at a faster pace than nongifted students” (Sousa, 2009, p. 48) and when gifted students are left in mixed-ability classes “the intellectual stagnation, boredom, and frustration that can result take their toll on motivation and mental alertness” (Stanley, 1989, p. 194). However, “there is no evidence that full time segregation [of the gifted] accomplishes the benefits of ability grouping more effectively than part-time” (Shore et al., 1991, p. 86).

Ability grouping. Ability grouping has been the very center of the debate on how best to group students. There are two types of ability grouping: Within-class grouping and Between-class grouping (frequently referred to as tracking). Ability grouping, as defined by Loveless (1998) is when “students are organized into groups within classes, creating “bluebirds” and “redbirds,” for example, with instruction targeted to each group's reading level” (p. 5).

This is an example of within-class ability grouping. The class itself has multiple abilities within the class, which makes it heterogeneous and allows for flexible grouping opportunities with students of mixed-abilities. It is strictly homogeneous grouping of students that has received much of the backlash, particularly the practice of tracking or between-class ability grouping. However, for the purpose of this study, unless specified, ability grouping refers to any number of students grouped together by ability, and will be considered a homogeneous grouping.

Tracking. Tracking, as defined by Loveless (1998) is:

> Middle schools and high schools use tracking to group students between classes, offering courses in academic subjects that reflect differences in students' prior learning. One student who is an outstanding reader may take an honors English course, while another student who struggles with reading may take a remedial

> reading course. An eighth grade math whiz may tackle high school courses (algebra or geometry) while other pupils are still learning how to work with fractions. (p. 5)

Tracking is an example of between-class ability grouping and has received much negative criticism. "Critics charge that tracking not only fails to benefit any student, but that it also channels poor students and students of color into low tracks and dooms a vast number of students to an impoverished education" (Loveless, 1998, p. 5). On the other hand, the argument is that tracking has in particular beneficial outcomes (e.g., positive attitudes, high academic achievement) for students in the higher tracks (De Naeghel, Valcke, De Meyer, Warlop, van Braak, & Van Keer, 2014).

Contradictory to the argument that tracking is detrimental to lower ability students, Kalogrides and Loeb (2013) found "little evidence that tracking hurts lower ability students" (p. 314). Furthermore, in an ex-post facto study analyzing the motivational outcomes of gifted student models, Esparza (2015) found that:

> Ninth-grade gifted students who had experienced ability grouped classrooms in the middle grades reported higher levels of self-efficacy, personal mastery goal orientation, personal performance-approach goal orientation, and classroom mastery goal structure than gifted students who had been cluster grouped in the middle grades. (p. 89)

Additionally, in a study conducted on the effects of acceleration on gifted students, accelerated gifted students reported having higher feelings of acceptance and emotional adjustment than their grade-level peers (Sayler and Brookshire, 1993). These studies made the implication that tracking serves as a beneficial instructional strategy for students.

Alternately, many studies conclude that tracking does more harm than good. Tracking, according to Oakes (1985) has “hellish consequences” (p. 5) for low and average ability students and that “the brightest and highest achieving students appear to do well regardless of the configuration of the groups they learn with” (p. 194). The implication is that tracking is negative for all, and not beneficial for any.

In a retrospective case study in London of a “tracked” grouping within a math department, Venkatakrishnan and Wiliam (2003) found that “the advantages of grouping by ability are limited, restricted to the highest attaining students, and secured at the expense of disadvantages for the lowest attainers” (p. 202). The researchers go on to say “unless a school can demonstrate that it is getting better than expected results through a different approach, we do make the presumption that mixed-ability grouping should be the norm in secondary schools” (p. 202). This statement that mixed-ability grouping is the best mode of instructional grouping can be found elsewhere.

In a study set in New Zealand, Hornby and Witte (2014) conducted surveys and interviews about grouping practices. Their research revealed that participants felt that ability grouping created several disadvantages within schools. One of the issues noted was that ability grouping led to lower teacher expectations for any class that was not categorized as high ability. Furthermore, “ability grouping disproportionately affects minority students, economically disadvantaged students, and students with low levels of ability” (p. 91).

The debate over whether or not tracking is beneficial or detrimental to students is a fiercely debated topic, with evidence to support both sides of the issue. Those who are not in support of tracking generally are in favor of cluster grouping and small group differentiation in order to meet the needs of all students.

Magnet classes. In a study conducted on the effects of magnet class attendance on the educational performance of students, Mingming and Xinzheng (2014) found that “magnet class attendance can increase students’ gross final examination scores by 0.647 standard deviations” (p. 560). They attributed this success to the benefits that magnet classes offer students: academically capable peers, knowledge spillover, and better classroom behavior, which leads to more time spent on instruction. Some limitations that should be addressed about this study include various aspects of magnet classes: smaller class size, effects of having high-achieving student peers, and higher teacher qualifications. These variables were not analyzed during the course of the study, but may contribute to the overall outcome of successful student achievement data as a result of magnet classes.

In another study that focused on how magnet schools and regular schools serve gifted students, Young and Ballie (2014) reported that gifted and talented programs in regular education schools were not effective in meeting the differentiation needs of gifted students when compared to local magnet schools, which met student needs.

Heterogeneous grouping. The National Association of School Psychologists (NASP) is not in favor of tracking because of the negative effects for students. The NASP (2009) position statement on “Appropriate academic supports to meet the needs of all students” is:

> NASP maintains that all students learn best in inclusive environments that implement high quality, science-based instruction. Inclusive programs are those in

> which students with and without disabilities receive appropriate specialized instruction and related services in age-appropriate general education classrooms that are located in the schools that the students would attend if they did not have a disability…NASP supports the use of multi-tiered problem solving strategies to address the behavioral, social, emotional, and academic needs of all students. (p. 2)

A multi-tiered approach includes using a Response to Interventions (RTI) plan of progress monitoring students who suffer academically. By using RTI, the implication is that all students will have their academic needs met within an inclusive classroom setting.

Cluster grouping. In the context of the current study, cluster grouping means placement of "several high achieving, high ability, or gifted students in a regular classroom with other students and a teacher who has received training or has a desire to differentiate curriculum and instruction for these 'target' students" (Gentry & MacDougall, 2009, p. 3). This is another example of within-class ability grouping. The benefit of cluster grouping is that the format allows for gifted students to interact and learn together without setting permanent grouping structures regarding students of mixed ability levels (Sousa, 2009).

In an ex post facto design study, Matthews, Ritchotte, and McBee (2013) discovered that all students, gifted and regular, displayed growth in mathematics in the years after having been in a cluster grouping structure, though they did not display growth during the year of cluster grouping itself. The suggestion that the researchers offer is that the benefits of cluster grouping may take more than a year to become evident. The researchers conclude that a cluster grouping model may be beneficial for gifted and typical students in mathematics, although this may not be evidenced during implementation.

Grouping and achievement. Perhaps one of the greatest arguments for ability grouping is that it has the potential for greater student achievement, if students are challenged at their appropriate pace. Since motivation can have an impact on achievement (Chessor, 2014), and gifted students are usually more advanced cognitively than their same-aged, middle school peers (Ritchotte, Rubenstein, & Murry, 2015), self-regulated learning and motivation are evident in high-achieving gifted students, regardless of the grouping structure (Ablard & Lipschultz, 1998). In regards to studies conducted, as with most analyses of the ability grouping debate, findings are mixed.

Pritchard (2012) examined the effects of ability grouping on lower-achieving students in a rural middle school. When low-achieving sixth and seventh grade students were grouped into classes heterogeneously, there was no significant difference in their level of achievement; whereas, when sorted into different tracks based upon ability, there was a significant decline in the achievement scores of lower achieving students. The implication is that being in a tracked lower class is detrimental to lower students. Due to the small sample size of the high-achieving track of students, the researcher was not able to draw any conclusions on the effects of being in a homogeneous track for high-achieving students.

However, in a different study of rural schools, when the argument was that gifted and high-achieving students were making the least gains in the wake of NCLB, the results yielded that tracking was beneficial for high-achieving students. The researcher recommended that ability grouping be considered as a cost effective alternative to gifted programming (Taylor, 2007).

In a quantitative study analyzing grouping structures within a middle school setting, Fierro (2015) found that non-advanced students, when mixed with high achieving students, had the highest achievement gains. A hypothesis of the study was that advanced students would perform well regardless of the grouping scenario in which they were placed. Based on the information that was collected, the researcher concluded that high achieving students may perform better in heterogeneous groups, though limitations of the study prevented a thorough analysis of this component of the study.

In an ex post facto quasi-experimental study designed to analyze the effectiveness of ability grouping within an inner city charter school, Sreckovic (2015) found that while there was no statistically significant difference between high and low achieving student improvement when in ability groups, students in ability groups significantly outperformed students who were not in ability groups. Based on the study results, ability grouping was recommended as an instructional strategy as a way of decreasing the achievement gap.

In another study investigating the relationship between ability grouping and reading achievement using a causal-comparative research design, Salcedo-Gonzalez (2012) found that there was no improvement in student achievement as a result of homogeneous grouping. There was also no significant improvement as a result of heterogeneous grouping, and the researcher noted that a limitation of the study was the lack of research into instructional practices within the various grouping structures.

Chessor (2014) discovered that there was no influence on student motivation for gifted students when sorted into ability groups, and that goal mastery orientation decreased over the course of the year for all students, regardless of grouping structure, which lead to the conclusion that additional research needed to be conducted regarding emotional development and motivation. In a study on disaffected gifted students, Abu-Hamour and Al-Hmouz (2013) found that low achieving students reported less motivation, less self-regulatory strategies, and more negativity towards school.

Some gifted students have insecurities and a lower self-concept when involved in an environment consisting of intellectual peers, a phenomenon known as the Big Fish Little Pond Effect (Rinn, Plucker, & Stocking, 2010; Shi et al., 2008). A decrease in self-concept could potentially cause a decrease in motivation, since a positive self-concept improves levels of motivation in students (Awan, Noureem, & Naz, 2011).

Neihart (2007) reported that there were mixed results on effects of ability grouping students, though homogeneously grouped gifted students displayed more positive results in a socioaffective spectrum. In another study, Peklaj, Zagar, Pecjak, and Levpuscek (2006) reported that there was no evidence of a difference in overall motivation based on grouping of students heterogeneously or homogeneously; however, students that were grouped in a higher ability level did display more intrinsic motivation.

As is often the case with ability grouping, the studies reveal evidence that is mixed and inconclusive in regards to achievement.

Gifted Education

Much of the debate over grouping structures includes gifted and high-achieving students. If not for a variation in ability, there would be no purpose for ability grouping. Many supporters of homogeneous grouping for gifted students claim that such practices allows for faster pacing of classes, greater opportunities for growth, and undeniably better scores academically. Opponents claim that homogeneous grouping of gifted students only further develops and broadens already present achievement gaps (Loveless, 1998). This is a much debated issue because it serves to answer the question: what is the best education for each child? Does a high achieving student need less attention from the educator, as they grasp concepts more quickly? The following studies analyzed the issue of grouping specifically for gifted students.

Gifted grouping. According to the National Association for Gifted Children (NAGC) Position Statement (2009), grouping gifted children is a fundamental practice in exemplary gifted education. Despite negative publicity relating to grouping of the gifted, the position by the NAGC is that the least restrictive environment is one that is created within a group of similar-ability peers.

The most common models for gifted education are pull-out and within-class ability grouping (Yun Dai & Chen, 2014). While cluster grouping of gifted students can be effective, there are drawbacks to heterogeneous classes (Brulles, Saunders, & Cohn 2010). According to Brulles et al. (2010), “When curricula are adjusted to correspond to ability levels, student achievement increases” (p. 333); teachers can cover more curriculum in a homogeneous setting “aimed at their faster rate of learning,” as observed by Patrick, Bangel, Jeon, and Townsend (2005, p. 103). This classroom structure affords teachers greater opportunities to eliminate instruction and assignment waiting (Peine & Coleman, 2010), allows for an environment for academic competitions that serve as motivators for gifted students (Ozturk & Debelak, 2008), and through acceleration, provides “positive effects on the academic ability of students with few negative side effects” (Rawlins, 2004, p. 44). Ultimately, homogeneously grouped gifted students perform better academically (Banfield, 2005; Shi et al., 2008).

In a comparison study of student perceptions and data related to grouping for gifted students, Shields (2002) found that there was evidence that homogeneous grouping was beneficial for gifted students in fifth and eighth grade, while there were no obvious detrimental effects on lower-achieving students.

In meta-analyses on cooperative learning for gifted and high-achieving students, Neber, Finsterwald, and Urban (2001) found that there were positive small to medium effects on students in lower and middle grades. The researchers recommended that additional explanatory studies be conducted, as well as commenting on the need for additional research in general on this topic.

While a homogeneous classroom that encourages competition may strengthen self-concept of some gifted students, it can have an adverse effect on others by "foster[ing] social comparisons that may lower self-concept" (Rinn, Plucker, & Stocking, 2010, p. 8). Self-concept is an individual's perception of academic, social, and physical abilities (Purkey, 1988; Rinn et al., 2010; Rinn, & Winiger, 2007; Rudasill, Capper, Foust, Callahan, & Albaugh, 2009; Shi, Li, & Zhang, 2008; Yan, & Haihui, 2005). Overall, gifted students have a higher self-concept than regular education students, but ability grouping can affect self-concept negatively (Banfield, 2005; Preckel, & Brull, 2008; Rudasill et al., 2009; Shi et al., 2008; Yan et al., 2005).

Steinberg and McCray (2012) found that middle school students perceive the most beneficial aspects of school as quality teachers, engaging, hands-on classrooms, and technological applications; however, gifted and talented students often feel that their needs are not being met (Benson, 2009; Piirto, 2005; Sak, 2004). Though gifted students are better at dealing with stress by using cognitive abilities (Amini, 2005), it is important for teachers to use student-driven learning models and to incorporate intrinsic motivation to meet the complex needs of gifted students (Fakolade et al., 2010; Garrett & Moltzen, 2011).

Gifted specific curriculum issues. There are several questions that VanTassel-Baska (2013) addresses as gifted specific curriculum issues:

- How do we ensure that curriculum is differentiated for the gifted?
- How do we assess gifted student learning effectively?
- How do we incorporate creative and innovative thinking within a traditional academic environment?
- How do we motivate gifted learners?
- How do we align gifted practices with general education curriculum standards and assessments? (pp. 72-74)

Generally speaking, teachers love gifted students (Colangelo et al., 1991). This is because gifted students are usually motivated, intelligent, quick-learning, and creative. Gifted students oftentimes make a teacher’s job easier by being easier to teach. They are a frequent classroom resource for partner and group guided assignments; they are model students; they do their homework. But how often do teachers meet about the needs of those gifted students? The answer, unfortunately, is not as frequently as they meet on students with behavior issues, academic struggles, or attendance concerns. The reason for this is obvious because gifted students do not *need* as much as other students. And therein lies the problem:

Without an environment that provides constant intellectually challenging material

> and sufficient opportunities, gifted students may fail to develop appropriate habits and strategies for effective learning. The failure of developing appropriate learning habits, strategies, and long-term motivation in learning might make them prone to underachievement. Given the increasing pressure of accountability on teachers to increase the academic performance of the class as a whole, there are increasing concerns that teachers may be tempted to use gifted students as teaching assistants to help lower performing peers. (Yun Dai et al, 2014, p. 67)

But how can this be avoided? According to the Georgia Department of Education (GaDOE, 2015) a student who has a high degree of intelligence, intellect, and/or creative abilities, is highly motivated, and/or has specific academic fields of excellence is considered a gifted education student. Additionally, this is a student who needs special services in order to reach their ability potential.

Though this definition is broad, it is also vague. The state offers no assessment requirements for meeting this criteria, and instead states that specific procedures and decisions regarding gifted education are based upon the discretion of local districts and school systems (GaDOE, 2015).

On top of that, the evaluation measures on a national level are unclear, as evidenced by a study conducted by Matthews and Shaunessy (2010):

> In addition to difficulties because of the arrangement of criteria in the [National Association for Gifted Children] Standards, we also found that some districts used interchangeably some terms (i.e., nomination vs. screening) that appeared to carry distinct meanings in the NAGC Standards. It is difficult to make progress when the same terms can carry different meanings for different practitioners. (p. 164)

This establishes another issue: what does it take to be a gifted student? If there are not clear terms, then there can be no clear expectations. If there are no clear expectations, then there can be no designated assessment standards. While there is research that supports the theory of cluster grouping and differentiation as being effective, there is an underlying concern of practical implementation. Differentiation, flexible grouping, and remediation are strategies all teachers should employ in order to effectively teach all learners, specifically those who struggle; however, “gifted students with their particular strengths are often ignored” (Peine & Coleman, 2010, p. 238). Differentiation can be difficult and time-consuming, and teachers who already feel that they have an overwhelming amount of work to do, can often dismiss it as a lesser concern in regards to effective instruction.

Gifted referral process. The referral and eligibility process for gifted education in Georgia involves four steps. Step 1 includes either an automatic or reported referral. An automatic referral is based upon a norm-referenced test result as decided by the district; a reported referral is based upon a teacher, parent, or peer recommendation due to student performance and ability. For Step 2, the search/eligibility team analyzes the referral for the student. This team evaluates the submitted referrals and determines whether or not the student should be submitted to formal evaluation, which is Step 3. For formal evaluation, the student is assessed based on motivation, creativity, achievement, and mental ability to see if the student qualifies for gifted education services. The final step, Step 4, is the evaluation of the eligibility team, which will determine whether or not the child qualifies as gifted and will receive gifted services, or will deem the child not eligible and recommend regular education classes (GADOE, 2015).

Regulations related to program delivery models. There are several approved models for delivering gifted curriculum in the State of Georgia. Gifted students must receive at least five segments of instruction per week. Within the approved models, teachers are required to follow the standards set for the curriculum standards. Gifted education teachers are required to have a gifted teaching endorsement for certification purposes. Local Education Agencies (LEA) are endowed with the responsibility of selecting the approved model of delivery, but must share publicly the differentiated curriculum and/or delivery model employed. Differentiated curriculum is defined as "courses of study in which the content, teaching strategies, and expectations of student mastery have been adjusted to be appropriate for gifted students" (GADOE, 2013, p. 1). The approved models are divided into direct and indirect services. The direct services models include: resource class, advanced content, and cluster grouping. The indirect services models include: collaborative teaching, internship/mentorship, and approved innovative models (GADOE, 2013). A further explanation of each model follows.

The resource class is a K-12 model that focuses on interdisciplinary content and should be advanced in content and pacing. The resource class is commonly referred to as a pull-out class and is popular in lower grades. Gifted students are not allowed to participate in more than ten full time equivalency (FTE) segments per week of the resource class (GADOE, 2013).

Advanced content is another K-12 model, in which students are grouped homogeneously based on ability, interest, and/or content. Students in this course do not need to be labeled gifted, but all are expected to work at the pace appropriate for the advanced content. If in K-5, students are not allowed to have more than two FTE segments per day per content area. Additionally, in K-5 students are not allowed to participate in an advanced content FTE segment and a cluster or collaboration model FTE segment in the same content area. In high school, the advanced content models are Advanced Placement (AP) and International Baccalaureate (IB) college course. These courses are structured based upon the College Board and International Baccalaureate Board frameworks. Class size is capped at twenty-one (GADOE, 2013).

The final direct service model is cluster grouping. In cluster grouping, a group of K-12 gifted students is put in a heterogeneous setting. The recommended size for a cluster group is between six to eight students. A gifted certified teacher is responsible for adjusting and reporting the differentiated curriculum assigned to the cluster group (GADOE, 2013).

Similar to cluster grouping, collaborative teaching is when another small group of K-12 gifted students is placed within a heterogeneous setting. The difference, however, is that in this co-teaching setting, a regular education teacher shares teaching and planning responsibilities with a gifted certified teacher. Documentation is required to show that curriculum modifications have been made in order to receive credit for FTE segment credit.

Another indirect service model is the internship/mentorship, available only to students in grades 9-12. In this scenario, a gifted student is paired with a mentor and allowed to pursue a profession of interest. Individual learning goals are set and monitored in order to receive FTE segment credit for the internship.

Finally, approved innovative models are allowed and left up to LEAs to determine. If programs are identified that meet the needs of gifted students, districts have the autonomy to pursue implementation of the programs. The GaDOE Innovative Model Review Team must approve these programs as submitted by local districts.

Middle School

"The greatest challenge…occurs during the middle school years, as educational needs of the gifted increase rapidly" (Stanley, 1989, p. 194).

The Middle School Mind

According to the National Middle School Association (NMSA), "Young people undergo more rapid and profound personal changes between the ages of 10 and 15 than at any other times in their lives," (p. 5). Aside from infancy, there is no period of time where there is a greater amount of change in an individual. In an interview with Boyce (2013), Sarah-Jayne Blackmore, Professor of Cognitive Neuroscience at University College London (UCL) and Royal Society Research Fellow, said that the brain goes through protracted development during adolescence and does not stop changing until reaching the 20s.

Adolescent brain-based research has been a major focus of neurological studies for the past fifteen years, and at this point is a well-documented topic of neuroscience. With over 1000 papers published about adolescent brain development, there is conclusive evidence that the brain continues to develop during this period of time. There is even the argument that adolescent brain development and the neuroplasticity present during the time is the second most sensitive development period, following the first five years of life (Boyce, 2013).

This has implications for classroom constructs that influence instructional implementation that is most beneficial to the middle school child. Furthermore, “schools have a responsibility to assist students in dealing with major societal issues” (NMSA, 2010, p. 8), and to assist them in their personal and academic growth during this time.

District Level Policy

There are policies in place to serve students on a local level. According to the district website of the study conducted, at the middle school level, gifted students are served through academic classes versus a pull-out model favored in the elementary schools. There are Advanced Content classes that students are placed in which offer accelerated curriculum in math, science, and reading and language arts. Another model in which gifted students are served is through cluster grouping within heterogeneous academic classes (LCMSW, 2015).

The middle schools offer remedial title services in reading and math for students who are in need of interventions according to universal screeners and assessment data. These are pull-out programs designed as connection classes. Special education students are taught within the least restrictive environment appropriate for individual students. Most special education students are served using the inclusion model of teaching for classroom instruction and an additional connection class for study skills, direct instruction, and additional support (LCMSW, 2015). The purpose of these programs is to meet the needs of all students.

Teacher Perception

In order to create positive change in education, teacher beliefs and perceptions must be analyzed. Teacher beliefs influence classroom climate, and can influence student motivation and achievement. Furthermore, teacher beliefs and perceptions can influence school climate, a fundamental part of a successful school environment. Around the world, educators promote a constructivist view of education, which is positively represented in varied instructional techniques (OECD, 2009).

In a study about teacher perception in grouping structures, Watson (2014) discovered that teachers expressed support for mixed-ability grouping. They were also in favor of detracking. Siegle, Wilson, and Little (2013) conducted a study on teacher opinion on acceleration. Results indicated that “teachers believed acceleration meets the academic needs of high-ability students” (p. 39), and did not express academic concerns. However, there were mixed perceptions on emotional concerns. While educators did not think that acceleration lowered student self-esteem, they were worried about their happiness and emotional adjustment to certain acceleration practices. There were similar mixed responses for social concerns: 61% did not think that accelerated students would feel awkward, but 55% were undecided or disagreed that accelerated students were socially well-adjusted. In regards to acceleration practices, the least desirable acceleration practices are those that are easiest and cheapest to implement, such as grade-skipping and early admission to kindergarten; whereas, the most popular acceleration preferences were AP and curriculum compacting. Additionally, teachers preferred practices that do not involve changing student environment.

In 2004, Ansalone and Biafora conducted a mixed-methods study analyzing elementary school teachers' perceptions in regards to tracking. When specifically asked about tracking and gifted students, results from teachers seemed contradictory. Fifty seven percent of teachers felt that gifted students should be grouped with other gifted students, but over seventy five percent also felt that gifted students had a positive effect on their lower performing peers and that grouping heterogeneously was beneficial. In later focus groups, it was revealed that teachers felt conflicted. The benefits of heterogeneous classrooms were praised, while teachers expressed feelings of frustration over not meeting the needs of the gifted in mixed ability settings (Ansalone & Biafora, 2004).

In a qualitative study conducted on teacher perception of heterogeneous grouping of students, Rimmer (2010) concluded that the study yielded mixed results regarding heterogeneous grouping and the benefits associated. Teachers felt that grouping students heterogeneously was beneficial in regards to social/emotional growth and increasing academic achievement, but did not feel that it necessarily improved equity for students. While equity improved for lower-achieving students, teachers felt that higher-achieving students were deprived of instruction, resources, and curriculum with like-ability peers when homogeneous classes were removed. Teachers felt that this was a negative for higher-achieving students.

Similar evidence was found in another study on teacher perception of heterogeneous grouping of students in secondary schools. O'Rourke (2013) received feedback from teachers that heterogeneous grouping is beneficial for lower achieving students in motivation and impacting study habits. However, teachers also said that they "believed that both low and high performing students did not get their academic needs completely met when in a heterogeneous learning environment" (p. 98). This serves as further evidence that data and information regarding grouping is inconclusive and mixed, even when it comes to teacher perceptions.

In regards to the planning aspect of heterogeneous grouping, teachers had much to say. Teachers expressed feelings of frustration over the inability to meet the needs of all learners. Many teachers felt that they had a responsibility to their students to move ahead in content even though not all students had completely grasped material; simultaneously, teachers expressed feelings of guilt over having to slow down instruction and giving advanced students too much idle time while reteaching material to the rest of the class (O'Rourke, 2013).

Though there is a plethora of research about the downfalls of tracking, in a study conducted by Keller (2011), "teachers believed that ability tracking will enhance achievement and improve self-concept among students. Furthermore, they do not subscribe to the criticism that tracking perpetuates inequality in the classroom" (p. 113). However, in a different study conducted on teacher perceptions of ability grouping, Watkins (2014) found teacher "responses showed support for mixed-ability grouping and supported the movement to detrack." As ever, the results when it comes to ability grouping are mixed and inconclusive.

When it comes to administrators, a qualitative study conducted on principal perceptions of ability grouping revealed that "the principals believe tracking denigrates the self-concepts of low-level students and defines for the student his or her place in the social structure at school" (Arrington, 2013, p. 166). However, the same study also showed that some felt that the tracking system within their school benefited all students, specifically “maintaining that gifted students benefit from homogenous grouping,…[and] students who are on or below grade-level also benefit because they receive the help they need to improve skills” (Arrington, 2013, p. 162). Furthermore, the principals shared similar perceptions about tracking, in that it is a part of the school process and has to be dealt with. Not all thought that it was harmful. In fact, one principal felt that it was the system of tracking that played a role in narrowing the achievement gap within his school (Arrington, 2013).

Taking the question a step further, in regards to superintendent perspectives on ability grouping, a qualitative study of four superintendents done by Sabolinksi (2016) found that superintendents philosophically agreed “tracking and academic grouping offers limited advantages to students” (p. 139). Those interviewed expressed frustration over the dilemma of how to address needed changes within districts and how to increase equity for all students. An observation that came out of this study was that allowing more fluidity and mobility between tracks could encourage students to work harder to achieve access to different levels.

Summary

The purpose of this chapter was to conduct a thorough review of the literature related to grouping. According to Festinger’s (1954) Social Comparison Theory, people like to group together with other people of similar interests and abilities. Though there has been much analysis of ability grouping, and a long history of debate regarding the topic, there is evidence to support benefits and detriments to both heterogeneous and homogeneous grouping. The purpose of this study was to analyze teacher perceptions and data of the impact of grouping structures on gifted and high achieving middle school students, particularly how and if it impacts achievement.

There is a lengthy legal history in the United States of ability grouping in relationship to discriminatory practices; there is also a plethora of international perspectives on the best way to group students and effectively teach at all levels of education. Despite all of the empirical evidence, there is no definitive answer regarding the great ability grouping question. When it comes to ability grouping, results are mixed and inconclusive, as there is evidence to support both sides of the argument.

When focused specifically on gifted and high achieving students, there is evidence to support that acceleration is beneficial in regards to student achievement. There are a variety of grouping structures that educators can employ as instructional strategies to benefit all students. It was the intent of the researcher to further analyze teacher perceptions of the impact that various grouping structures have on these particular students.

The key planning chart that the researcher used to conduct and align the literature with research questions can be

found in Appendix H.

CHAPTER III

METHODOLOGY

Introduction

The purpose of this mixed methods methodology study was to determine teacher perceptions and data relating to the impact of grouping structures on gifted and high achieving middle school students. While ability grouping has long been a much-debated and much-researched topic in education (Kulik, 1993; Loveless, 1998; Oakes, 1985; Slavin, 1987), there have been recommendations for future research that involve: teacher perception of gifted and high achieving students in rural locations as well as how grouping impacts these particular students (Johnston and Wildy, 2016; Missett, Brunner, Callahan, Moon, and Azano, 2014; Pritchard, 2012). The researcher intended to fill this gap in the literature and contribute to the existing research by addressing this topic.

Research Questions

The research questions used to guide this study were as follows:

1) What are teacher perceptions of how grouping impacts gifted and high achieving students?

2) Does student achievement and growth differ for gifted and high-achieving students according to student grouping?

3) What is the relationship between teacher perceptions and data of student achievement and grouping for gifted and high achieving students?

Research Design

The researcher decided upon a mixed methods design for the study in order to obtain a more holistic and comprehensive analysis of the topic. Mixed methods design allows for quantitative and qualitative data to be analyzed (Johnson & Christensen, 2012), and by including each type of methodology, weaknesses are offset in analyses by the strengths of the other (Creswell & Plano-Clark, 2006). Quantitative information was collected from student achievement and growth data along with teacher survey data; qualitative information was collected from teacher focus groups. A multi-site investigation was conducted in order to increase participation and sample size as well as providing a greater representative population.

The paradigm for this study was pragmatism, as a means to combine what is true and what works in reality. Pragmatism views knowledge as being both constructed and based on the reality of the world one experiences and lives in. With dialectical pragmatism, both methodologies, quantitative and qualitative, are taken seriously and synthesized into the research (Teddlie & Tashakkori, 2009), which was the goal of this study.

The researcher used a sequential explanatory design (Creswell, 2014) in this mixed methods methodology study. This research design started with quantitative data collection, analysis, and results. The results of that research informed and lead into the following qualitative data collection. Qualitative data were analyzed for themes and finally all of the data were synthesized in a concluding discussion. This research design was explanatory because the qualitative data explain parts of the quantitative results; it is sequential because there was an order of data collection with quantitative followed by qualitative (Creswell, 2014). This design was selected because it was the results of the quantitative study that informed decisions on whom to select for focus group participation.

To begin the study, the researcher administered a teacher survey to the faculty of the two district middle schools participating in the study. This survey was a sixteen question instrument (Appendix A) that resulted in numeric data informing the researcher of teacher perceptions of the impact of grouping structures on gifted and high achieving middle school students. Following this data collection, the researcher analyzed the numeric data. These findings are summarized by major variables into summary tables and include result descriptions (Clark & Creswell, 2008).

Based upon the results of the survey, a focus group for each school was created. The researcher employed stratified purposive sampling in selecting focus group members (Ritchie, Lewis, Nicholls, & Ormston, 2014). The focus groups were comprised of six teacher participants that expressed differing perceptions of grouping structures and the impact that they have on gifted and high achieving students. The reasoning for this was to have an accurate representation of the various opinions of the faculty population (Ritchie, Lewis, Nicholls, & Ormston, 2014).

The members of the two focus groups were posed with the same set of questions and followed the same semi-structured interview protocol (Appendix B). The sessions were recorded and submitted to the application, Rev, for transcription. Upon receipt of focus group sessions transcripts, data was analyzed for thematic content. The researcher underwent the process of using first cycle codes, second cycle codes, and a qualitative data analysis tool, QDA Miner Lite, during data analysis. Upon completion of data analysis, the researcher reported findings in Chapter IV (Clark et al., 2008).

Simultaneously, a comparative ex post facto design was applied to archival test data (Creswell, 2014). The categorical variable of grouping (either accelerated homogeneous or heterogeneous cluster) was analyzed regarding the end of grade Georgia Milestones Assessment. Using this test data ensured content and construct validity and reliability of information (Teddlie & Tashakkori, 2009), as the End of Grade assessment is a criterion referenced assessment distributed by the State of Georgia. Test data from the courses that offered accelerated options were analyzed. The offered accelerated courses at the middle schools were 8th grade math, 8th grade science, 8th grade language arts, 7th grade math, and 7th grade language arts. End of grade test data were analyzed to determine variances between the grouping structures and if the variable had an impact on achievement and growth.

Population

According to the United States Census Bureau (2010), an urbanized area has over 50,000 people, while an urban cluster has between 2,500 and 50,000 people. Any area that has less than 2,500 people is considered rural. According to Hardré (2008), fewer than six percent of educational studies take place in a rural setting, while over 30% of national schools are rural.

The population of this study consisted of teachers employed in the two middle schools of a rural South Georgia school district. The entire faculty of the two campuses were the unit of analysis, which consisted of 89 teachers total. All teachers received the survey instrument, and all were encouraged to participate, at the urging of building administration. This was the best possible population for this study because these were the teachers who had daily interaction with middle school students.

The two schools will henceforth be referred to as School A and School B. School A consisted of 797 students, 128 of whom were gifted, or 16% of the total population. In this school, 40% of the population qualified as economically disadvantaged. The school's ethnicity was 70% Caucasian, 21% African-American, 4% Asian, 2% Hispanic, and 3% Multiracial. School B consisted of 679 students, 77 of whom were gifted, or 11% of the total population. In this school, 43% of the population qualified as economically disadvantaged. The school's ethnicity was 70% Caucasian, 19% African-American, 3% Asian, 3% Hispanic, and 4% Multiracial. By understanding the context of the schools, the reader is better able to judge the ultimate transferability of findings to his or her own setting (Patton, 2002).

Participants

After receiving permission from the IRB to conduct the study, the researcher approached the principals at each middle school about appropriate dates to address the faculty about participation in the study. For each campus, the researcher attended a faculty meeting and distributed informed consent forms to all faculty. At these meetings, the researcher discussed the purpose and methodology of the study, and informed faculty that they would be receiving the survey and digital consent form and that the survey would remain open for a two-week period of time. The survey asked teaching faculty of the two district middle schools questions regarding their perspectives about the impact that various grouping structures have on gifted and high achieving middle school students. The survey (appendix A) was originally designed and piloted by S. Rimmer (2010) in the dissertation study "Teacher perceptions of the impact of heterogeneous grouping on improving student achievement." Teachers were informed that survey responses were confidential, though not anonymous, as a stratified purposeful sample (Creswell, 2014) of teachers was created based upon varying responses. These teachers were then asked via email to participate in a follow-up focus group on each campus. Focus group participants were provided with focus group protocol and questions prior to the session. Correspondence regarding teacher focus group participants can be found in appendixes B, C, and D.

Sample

After collecting the survey data, two focus groups were created using stratified purposeful sampling (Patton, 1990). Since focus groups consist of open-ended interview questions of groups of five to eight participants on specific, targeted topics (Patton, 1990), the researcher designed the focus group to have a representation of two participants who felt strongly supportive of grouping for the gifted, two who had neutral views on the topic, and two who felt strongly against grouping for the gifted, if possible. These perspectives were determined as reflected in the previously distributed survey responses. The reason for this, and the purpose for stratified purposeful sampling, was to acknowledge major variations instead of identifying a common core, although a common theme may have been revealed in the analysis (Patton, 1990).

Instrumentation

The purpose of the teacher survey instrument (Appendix A) was to answer the first research question: What are teacher perceptions of how grouping impacts gifted and high achieving students? The survey instrument used was designed and piloted by Rimmer in 2010 in the dissertation study "Teacher perceptions of the impact of heterogeneous grouping on improving student achievement." Permission to reprint and reuse the survey instrument regarding grouping and high-achieving students was granted (Appendix F). The survey consisted of sixteen statements related to teacher perception of the impact of grouping on high-achieving students. Each statement is associated with a Likert scale response, which varies from "strongly agree" to "strongly disagree" options. Likert scale responses are common in attitude assessments, allowing the participant to select an answer to a varying degree (Kubiszyn & Borich, 1984). Content validity was established for this survey instrument as represented in the following table, Table 1.

Table 1 – Content validity survey instrument

Item	**Research**	**Research Question**
1. Academic Achievement	Kulik & Kulik, 1991	1
2. Student Engagement	Rinn, Plucker & Stocking, 2010; Oakes, 1985	1
3. Challenging Courses	Mingming & Xinzheng, 2014	1
4. Understanding of Concepts	Matthews, Ritchote, & McBee, 2013	1
5. Lower Achieving Students	Oakes, 1985; Sreckovic, 2015	1
6. Pacing (in Theory)	Plucker & Callahan, 2014	1
7. Participation Rates	Kulik & Kulik, 1991	1
8. Discipline	Oakes, 1985	1
9. Pacing (in Practice)	Plucker & Callahan, 2014	1

Item	**Research**	**Research Question**
10. Attendance	Abu-Hamour & Al-Hmouz, 2013	1
11. Equity	Slavin, 1986; Rimmer, 2010	1
12. Emotional Growth	Fierro, 2015; Neihart, 2007; Chessor, 2014	1
13. Drop-out Rate	Chessor, 2014	1
14. Rigorous Curriculum	Plucker & Callahan, 2014; Sousa, 2009	1
15. Differentiated Curriculum	Tomlinson, 2015	1
16. High Expectations	Siegle, Wilson, and Little, 2013; Sousa, 2009	1

The questions used to guide the focus group came from the study “Secondary school teachers’ attitudes towards and beliefs about ability grouping” by Hallam and Ireson in 2003. Participants received focus group protocol prior to the session (Appendix C). Permission was sought and granted to reuse, revise, and reprint survey questions (Appendix F). Since the focus groups interview were semi-structured, the researcher and participants had the questions as a guide, but the researcher had the discretion to deviate from the questions when appropriate (Hays et al., 2012). The same questions were used in both focus groups sessions (Appendix B). Content validity was established for this focus group interview protocol as represented in the following table, Table 2.

Table 2 – Content validity focus group interview questions

Item	**Research**	**Research Question**
1 (including 1a,1b) – Academic Performance	Barfield, 2005; Siegle, Wilson, & Little, 2013; Kulik & Kulik, 1991	1
2 (including 2a, 2b) – Personal and Social Effects	Benson, 2009; O'Rourke, 2013	1
3 (including 3a, 3b) – Equity	Watkins, 2014; Keller, 2011	1

Item	Research	Research Question
4 (including 4a, 4b) – Discipline	Oakes, 1985; Mingming & Xinzheng, 2014	1
5 (including 5a, 5b) – Teaching	Arrington, 2013; Ansalone & Biafora, 2004; Patrick, Bangel, Jeon, & Townsend, 2005	1

Validity was ensured by utilizing triangulation. Triangulation is defined to be “a validity procedure where researchers search for convergence among multiple and different sources of information to form themes or categories in a study” (Creswell & Miller, 2000, p. 126). Multiple sources of data, survey, focus group, and interview were utilized over the course of the study in an effort to answer the research question regarding teacher perceptions of the impact of grouping on gifted and high achieving middle school students. Internal and external validity of student assessment data was ensured by using the criterion referenced End of Grade assessment results issued by the State of Georgia (Teddlie & Tashakkori, 2009). Furthermore, validity was established by ensuring trustworthiness with participants and truthfulness in findings and conclusions by member checking using probes during sessions and sharing completed transcripts with group members (Hays & Singh, 2012). Whereas internal validity refers to the potential for a causal relationship between variables without interference, external validity refers to the extent that study designs and findings are generalizable to a separate setting or population (Hays et al., 2012). Trustworthiness was maximized by incorporating credibility, transferability, dependability, confirmability, authenticity, coherence, sampling adequacy, ethical validation, substantive validation, and creativity into the study (Hays et al., 2012). The researcher completed reflexivity journals throughout the research and analysis process. Along with triangulation, member checking, reflexive journaling, and simultaneous data collection and analysis occurred as the emergent design (Maxwell, 2005) component of qualitative inquiry (Hays et al., 2012).

Ethical Considerations

Identifying the role of the researcher was one of the ethical considerations that the researcher addressed. Reflexivity was an important part of this analysis. As a faculty member on staff at one of the schools involved in the study, the researcher considered this an undertaking of insider research (Hays & Singh, 2012), since the researcher had knowledge of the school policies and environments regarding grouping structures, which was varied. In undertaking researcher reflexivity, the researcher addressed authenticity by analyzing bias regarding the topic prior to the commencement of the study. The researcher was aware that there was a personal bias in favor of acceleration and homogeneous grouping of gifted and high achieving students. To address this bias, the researcher acted in the role of facilitator and moderator in the focus group sessions, and attempted to abstain from the role of participant. This personal perspective translated into subjectivity, or the researcher’s understanding of the phenomenon, in the qualitative portion of this study (Hays et al., 2012). Additionally, it was the researcher’s role to identify the participant voice in the study, by considering components of accuracy, completeness, and emotional content. This was addressed during qualitative data analysis, and further developed in the study by including several direct participant quotes to describe a theme or code (Hays et al., 2012). Furthermore the researcher acted in the role as main investigator in distributing and analyzing survey data from faculty as well as collecting and analyzing the assessment data retrieved from the school principals.

There are several considerations that the researcher addressed in regards to the effects on the educational research community, particularly that the researcher has a responsibility to participants. Following IRB approval, the researcher guaranteed participant rights to privacy, to anonymity, to confidentiality, and to avoid harm, betrayal, or deception (Govil, 2013). Participants in the study received informed consent and had the option to back out of participation at any time. Bias was avoided in the focus group sessions by creating groups that contained stratified purposeful sampling of participants (Creswell, 2014). This sampling of participants contained the range of opinions regarding grouping structures, and member checking took place during the sessions to maximize trustworthiness (Hays et al., 2012). In regards to confidentiality, all information was kept under a password protected computer and within a password protected database. The schools involved in the study are identified as School A and School B. Final conclusions of the study have been shared with the administration and faculty of the schools involved.

Data Collection

Before the study commenced, the researcher obtained permission and approval from the district office and principals of both schools to go forward with the study in the two county middle schools, as well as approval from the Institutional Review Board at Columbus State University.

The initial survey was distributed via a Google form to faculty of both schools. Each respondent was allowed to submit one response, and the researcher was able to design a stratified purposeful sampling focus group based upon responses (Patton, 1990). These survey data were kept confidential, though not anonymous, in order to allow for a purposeful sampling of teachers to be created. Survey data were kept on a password protected computer under a password protected database. The researcher employed analytic memos after survey collection in response to the data, as a means of initial analysis (Hays et al., 2012).

After the quantitative data of teacher perception were collected and analyzed, a focus group was set for each school campus. This focus group was a purposive sampling of the entire faculty population for each school. Focus group data were recorded digitally and were transcribed using the third party digital application, Rev, for later analysis. In summation, the teacher perception data for this study were collected via the web-based survey to all faculty and through the focus group data in small group settings.

The focus groups were comprised of six faculty members from each campus and were designed based on purposeful sampling of the initial survey data. The purpose of a focus group is to discuss the topic with a gathering of individuals who are homogeneous in some way (Hays et al., 2012), and for this study, it was that the teachers had a perspective on grouping and gifted and high achieving students. “It is the interactive nature of this data collection format that produces data that cannot be obtained from individual interviews” (Hays et al., 2012, p. 252), and therefore focus group data provided a more holistic qualitative picture of teacher perspectives in regards to the study topic. The focus groups consisted of six individuals each, and the researcher provided interview questions to guide the process. The interview questions came from a study completed in 2003 by Hallam and Ireson, “Secondary school teachers' attitudes towards and beliefs about ability grouping.”

Though focus groups generally involve six to twelve individuals, the researcher opted to select a small focus group setting in order to maintain accurate notes and garner more valuable results, which can be affected when focus groups are larger (Hays et al., 2012). Analytic memos were once again utilized at the conclusion of the focus group sessions as a means to record initial impressions (Hays et al., 2012).

In addition to teacher perception, this study examined student achievement by collecting and analyzing assessment data. For this quantitative section, gifted and high achieving student assessment data were compared to grouping structures to see if any trends were evident. The researcher analyzed test results for gifted and high achieving students and compared performance and growth as displayed in different grouping settings.

Using 2015 and 2016 archival data from the Statewide Longitudinal Data System (SLDS), the researcher collected test data of the gifted and high achieving students in sixth, seventh, and eighth grades in both facilities. Data were categorized into different subject areas (math, language arts, and science) that offer accelerated delivery models, and the achievement and growth scores of students who received the homogenous accelerated instruction were compared to gifted and high achieving students who did not receive this instruction. The accelerated courses offered at the middle schools for the 2015-2016 school year were 6th grade math, 7th grade math, 7th grade language arts, 8th grade language arts, 8th grade math, and 8th grade science. The researcher compared these homogeneously grouped accelerated End of Grade achievement scores against the heterogeneously clustered gifted and high achieving students who took the same End of Grade assessment. Sixth grade math scores were eventually excluded from analysis, as all gifted and high achieving students were placed in an accelerated course, thus eliminating a clustered group to compare the scores against.

To identify gifted and high achieving student data and to compare homogeneous accelerated to heterogeneous clustered effects, the researcher needed to identify student information according to the assigned group for instruction. Student names were replaced with codes to represent homogeneous accelerated and heterogeneously clustered grouping arrangements.

Response Rate

In order to avoid the possibility of sample bias, it is important to have an adequate response rate. That being said, web-based surveys average response rates below 75% (Saldivar, 2012). For this study, the researcher attempted to have a response rate of 75%. The delimitation of the researcher having personally worked with most of the 89 faculty members should have allowed for greater participation in the web-based survey. Though paper-based surveys have better response rates than web-based surveys (Nulty, 2008), for convenience and ease of accessibility, web-based surveys were the preferred method for survey response collection. Additionally, the researcher boosted participation by sending reminder emails to all faculty, assured participants of the confidentiality of their responses, and by keeping the questionnaire brief (Nulty, 2008). The actual response rate for total participation was 69%.

Data Analysis

In this nonexperimental design of descriptive and comparative data analysis, there was a categorical variable of grouping (Creswell, 2014). In the statistical analysis of the archival test data, there was a dichotomous variable (Lomax & Hahs-Vaughn, 2012) present: homogeneous versus heterogeneous grouping. Testing data were organized within an Excel spreadsheet and SPSS statistical software and kept under password protection at all times. Data were separated into content areas and grades where accelerated curriculum is available and delivered in a homogenous setting (math, language arts, science). Gifted and high achieving student scores were analyzed based upon grouping structure, grade, content area, and school. Furthermore, based upon this information, the researcher analyzed student achievement and growth as indicated by the End of Grade (EOG) scores set forth by the Georgia Milestones Assessment. Confidentiality was assured by removing all identifying information such as student name or teacher name from the data and replacing the information with codes. Descriptive statistical data were analyzed using SPSS statistical software.

In regards to the qualitative data, after recording and transcribing the data from each focus group, the researcher took all field notes, transcriptions and data and began the process of analysis. All data were stored and analyzed in the program, QDA Miner Lite. To begin, the first phase codes of In Vivo coding were applied to retrieve and categorize similar data (Miles, Huberman, & Saldana, 2014). In Vivo codes use words and phrases, are placed in quotation marks, and are appropriate for beginning qualitative researchers and studies that prioritize participant voice (Miles et al., 2014). For the second cycle of coding, focused coding was used to streamline and categorize the initial codes (Saldana, 2009). At that point, jottings and analytic memos were made in order to derive more general categories and themes. Then assertions and propositions were generated to make connections and reflect on the findings and conclusions of the study. This process was done for School A, then repeated for School B, and then the data were combined and reviewed together. Finally, a within-case analysis was conducted to fully describe, understand, and explain the data (Miles et al., 2014).

Reporting the Data

Using descriptive statistics to summarize and present the data in an abbreviated manner, the researcher reported findings (Lomax & Hahs-Vaughn, 2012). Assessment data were reported using output tables and graphs from SPSS to illustrate the results of the two grouping structures in terms of outcomes (Creswell, 2014). The two groups of gifted and high-achieving students were accelerated homogeneous and heterogeneous cluster. Accelerated homogeneous means that students of similar high ability are within one class period together and received accelerated curriculum. Heterogeneous cluster means that students labeled gifted and high achieving were grouped within a mixed-ability classroom, and should have received differentiated curriculum.

In regards to teacher perceptions, a summary of survey responses was provided using descriptive statistics (Creswell, 2014). The qualitative data was reported in a narrative format organized by themes in order to display the findings. The researcher generated meaning from the data by noting patterns and by clustering in addition to making contrasts and comparisons to build a logical chain of evidence (Miles et al., 2014).

Summary

The purpose of this study was to analyze how grouping impacts gifted and high achieving student achievement, based upon teacher perception and assessment data. This study used a sequential explanatory design (Creswell, 2014), starting with a quantitative portion of data collection followed by a qualitative portion of data collection. Simultaneously, an ex post facto analysis of test data was conducted. In regards to teacher perceptions, the quantitative data was collected through a survey that was distributed to all faculty members of the two middle schools participating in the survey; qualitative data was comprised of focus group feedback. In regards to student achievement, quantitative data was collected and reported regarding student assessment results for gifted and high achieving middle school students compared to grouping structures of those students. Findings and conclusions were displayed in matrix and table format. Through the mixed methods design, the researcher attempted to achieve a holistic and comprehensive analysis of teacher perception and data related to grouping of gifted and high achieving students.

CHAPTER IV

RESULTS

Introduction

The purpose of this study was to analyze teacher perceptions of the impact of grouping on gifted and high achieving middle school students in regards to achievement. This analysis was derived from assessment and teacher perception data. This mixed methods study followed a sequential explanatory design (Creswell, 2014) to address teacher perceptions of grouping, as well as an ex post facto analysis of student assessment data.

Research Questions

The research questions for this study were as follows:

1) What are teacher perceptions of how grouping impacts gifted and high achieving students?

2) Does student achievement and growth differ for gifted and high-achieving students according to student grouping?

3) What is the relationship between teacher perceptions and data of student achievement and grouping for gifted and high achieving students?

The first research question, regarding teacher perceptions, was answered through the survey and teacher focus group data. The second research question, addressing student achievement and grouping, was answered through student assessment data. The third research question, regarding the relationship between teacher perceptions and data, was answered by analyzing all data, running a simple linear regression, and drawing conclusions post analysis. It was necessary to employ multiple means of data collection in order to achieve a comprehensive analysis.

Research Design

The researcher employed a mixed method design for this study. A sequential explanatory design (Creswell, 2014) was followed. Initial quantitative data was collected from teacher survey data from faculty of School A and School B. These data were analyzed and, based upon responses, a purposeful stratified sample of teachers was created for a focus group for each school. The order of data collection (with quantitative followed by qualitative) made this a sequential design (Creswell, 2014). Quantitative data were collected from the focus group sessions at each school. These data were analyzed holistically for themes that were touched upon within the teacher survey. The research design was explanatory because the qualitative results explain parts of the quantitative results (Creswell, 2014). Simultaneously, a comparative ex post facto design was applied to archival test data (Creswell, 2014).

The researcher established trustworthiness of the data by incorporating triangulation techniques of multiple sources of data, member checking of focus group sessions, and reflexive journaling (Teddlie & Tashakkori, 2009).

Respondents

Surveys were distributed to certified faculty at each of the district middle schools, regardless of content area, grade, or years of teaching experience. The same survey was distributed to all faculty members. This sixteen question survey was piloted and used by

Rimmer (2010) in the researcher's dissertation, "Teacher perceptions of the impact of heterogeneous grouping on improving student achievement." At school A, there were 47 faculty members who received the survey. Of those 47, there were 31 who responded, yielding a response rate of 66%. At school B, 42 faculty members received the survey, with 30 responding. This corresponds to a response rate of 71%. The total number of faculty members that received the survey was 89, with 61 opting to complete it. The overall average rate of participation was 69%. Though this is a lower response rate than the researcher was hoping to obtain, according to Baruch and Holtom (2008), the average survey response rate for data collected from individuals is 52.7%. The response rate for this survey was, therefore, higher than the average of many surveys distributed to individuals.

Findings

Findings were categorically organized into the following sections: Survey Data, Focus Group Data, Student Assessment Data, and Relationship Data.

Survey Data

The purpose of the teacher survey was to collect quantitative data relating to research question one: What are teacher perceptions of how grouping impacts gifted and high achieving students? The following analysis comes from a combination of all of the teacher responses from both schools. Using SPSS for descriptive analysis, the researcher was able to examine the statistical data associated with the Likert-scale based 16 question survey distributed to faculty members of School A and School B. The following data were based upon N=61 for teacher responses.

Table 3 – Faculty member results regarding academic achievement

Academic Achievement					

In regards to statement one: Heterogeneous grouping increases the academic achievement of most higher-achieving students, the highest percentage of teachers, 32.8%, disagreed with this statement. Though the next highest percentage, 26.2%, of teachers agreed with the statement. Nearly a quarter of participants, 23%, were undecided regarding the statement (Table 3).

Table 4 – Faculty member results regarding student engagement

Student Engagement					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	5	8.2	8.2	8.2
	Disagree	18	29.5	29.5	37.7
	Undecided	11	18.0	18.0	55.7
	Agree	22	36.1	36.1	91.8

Student Engagement					
	Strongly Agree	5	8.2	8.2	100.0
	Total	61	100.0	100.0	

Statement two: Heterogeneous grouping increases student engagement for most higher-achieving students, had an equal number of participants, 8.2%, to strongly agree and strongly disagree to this statement; although the majority of teachers, 36.1%, agreed with this statement (Table 4).

Table 5 – Faculty member results regarding challenging course

Challenging Courses					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Undecided	2	3.3	3.3	3.3
	Agree	23	37.7	37.7	41.0
	Strongly Agree	36	59.0	59.0	100.0
	Total	61	100.0	100.0	

In regards to statement three: I often encourage higher-achieving students to take challenging courses, there was an obvious majority response. Though there were two participants who were undecided regarding this statement, the other 59 participants (96.7%) agreed or strongly agreed to encouraging gifted and high-achieving students to take more challenging courses (Table 5).

Table 6 - Faculty member results regarding understanding concepts

Understand Concepts					
		Frequency	Percent	Valid Percent	Cumulative Percent

Understand Concepts					
Valid	Strongly Disagree	4	6.6	6.7	6.7
	Disagree	21	34.4	35.0	41.7
	Undecided	11	18.0	18.3	60.0
	Agree	20	32.8	33.3	93.3
	Strongly Agree	4	6.6	6.7	100.0
	Total	60	98.4	100.0	
Missing	System	1	1.6		
Total		61	100.0		

Statement four: Heterogeneous grouping increases understanding of concepts for most higher-achieving students, had results that were nearly balanced in regards to differing perspectives. There were 25 participants (41.7%) who strongly disagreed or disagreed, while there were 24 participants (40%) who agreed or strongly agreed. There were 11 participants (18.3%) who were undecided about this statement (Table 6).

Table 7 – Faculty member results regarding effect on lower achieving students

Lower achieving					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	2	3.3	3.3	3.3
	Disagree	11	18.0	18.0	21.3
	Undecided	16	26.2	26.2	47.5
	Agree	25	41.0	41.0	88.5
	Strongly Agree	7	11.5	11.5	100.0
	Total	61	100.0	100.0	

Statement five: Heterogeneous grouping increases the academic skills and abilities of most lower-achieving students, yielded results in the affirmative, with 52.5% of responses indicating that teachers agreed or strongly agreed with this statement. Forty one percent alone agreed, whereas only 18% disagreed (Table 7).

Table 8 – Faculty member results regarding the need for increased pacing

Pacing Increased

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	15	24.6	24.6	24.6
	Undecided	8	13.1	13.1	37.7
	Agree	25	41.0	41.0	78.7
	Strongly Agree	13	21.3	21.3	100.0
	Total	61	100.0	100.0	

While there was not a single respondent to strongly disagree with statement six: The pace of instruction should be increased to accommodate higher-achieving students in heterogeneous groups, nearly a quarter of participants (24.6%) did disagree. The majority of participants either agreed or strongly agreed to statement 6, with a combined total of 62.3% (Table 8).

Table 9 – Faculty member results regarding decreased participation

Decreased Participation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	2	3.3	3.3	3.3
	Disagree	25	41.0	41.0	44.3
	Undecided	11	18.0	18.0	62.3
	Agree	19	31.1	31.1	93.4
	Strongly Agree	4	6.6	6.6	100.0
	Total	61	100.0	100.0	

For statement seven: Heterogeneous grouping decreases the participation rates of most higher-achieving students, the majority of results were negative, with a total of 44.3% to select disagreed or strongly disagreed, though the margin was not wide. A total of 38.2% of participants selected agreed or strongly agreed in regards to a decrease in gifted and high-achieving student participation within a heterogeneous setting (Table 9).

Table 10 – Faculty member results regarding decreased discipline

Decreased Discipline					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	5	8.2	8.2	8.2
	Disagree	21	34.4	34.4	42.6
	Undecided	18	29.5	29.5	72.1
	Agree	14	23.0	23.0	95.1
	Strongly Agree	3	4.9	4.9	100.0
	Total	61	100.0	100.0	

Statement eight: Heterogeneous grouping decreases classroom discipline issues for most higher-achieving students, yielded the majority of responses as disagree with 34.4%; however, many teachers were undecided about this question, with a response rate of 29.5% (Table 10).

Table 11 – Faculty member results regarding the practice of increased pacing

I Increase Pace					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	12	19.7	20.0	20.0
	Undecided	9	14.8	15.0	35.0

I Increase Pace					
	Agree	29	47.5	48.3	83.3
	Strongly Agree	10	16.4	16.7	100.0
	Total	60	98.4	100.0	
Missing	System	1	1.6		
Total		61	100.0		

In regards to statement nine: I frequently increase the pace of instruction to address the needs and abilities of higher-achieving students, many teachers answered in the affirmative. A combined total of 63.9% of teachers agreed or strongly agreed to this statement regarding increasing pace to meet the needs of higher-achieving students (Table 11).

Table 12 – Faculty member results regarding increased attendance

Increases attendance					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	2	3.3	3.3	3.3
	Disagree	18	29.5	29.5	32.8
	Undecided	32	52.5	52.5	85.2
	Agree	8	13.1	13.1	98.4

Increases attendance					
	Strongly Agree	1	1.6	1.6	100.0
	Total	61	100.0	100.0	

The statement with the greatest number of uncertain responses was number 10: Heterogeneous grouping increases attendance for most higher-achieving students. Over half of respondents, 52.5%, indicated that they were unsure of the effect that grouping had on attendance for gifted and high achieving students (Table 12).

Table 13 – Faculty member results regarding increased equity

Increases equity					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	5	8.2	8.2	8.2
	Disagree	20	32.8	32.8	41.0
	Undecided	16	26.2	26.2	67.2
	Agree	18	29.5	29.5	96.7
	Strongly Agree	2	3.3	3.3	100.0
	Total	61	100.0	100.0	

Statement 11: Heterogeneous grouping increases equity for most higher-achieving students, was another statement that yielded fairly mixed results. The majority of respondents indicated that they disagreed or strongly disagreed with the statement, with a combined total of 41%. A combined total of 32.8% of participants agreed or strongly agreed that heterogeneous grouping increases equity for gifted and high-achieving students, while 26.2% were undecided about the statement (Table 13).

Table 14 – Faculty member results regarding social and emotional growth

Social Emotional					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	3	4.9	5.0	5.0
	Disagree	13	21.3	21.7	26.7
	Undecided	13	21.3	21.7	48.3
	Agree	26	42.6	43.3	91.7
	Strongly Agree	5	8.2	8.3	100.0
	Total	60	98.4	100.0	
Missing	System	1	1.6		
Total		61	100.0		

For statement 12: Heterogeneous grouping has a positive effect on the social and emotional growth of most higher-achieving students, the majority of respondents answered in the affirmative with 42.6% that agreed and 8.2% that strongly agreed. This was in contrast to 21.3% who were undecided, 21.3% who disagreed, and 4.9% who strongly disagreed (Table 14).

Table 15 – Faculty member results regarding decreased drop-outs

Decreased drop out					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	3	4.9	4.9	4.9
	Disagree	14	23.0	23.0	27.9
	Undecided	31	50.8	50.8	78.7
	Agree	12	19.7	19.7	98.4
	Strongly Agree	1	1.6	1.6	100.0
	Total	61	100.0	100.0	

About 50% of participants were undecided about statement 13: Heterogeneous grouping reduces the number of higher-achieving students that drop out of school, with 50.8% selecting undecided. The remaining participants' answers were fairly balanced, with a total of 27.9% who strongly disagreed and disagreed with the statement, and a total of 21.3% who agreed and strongly agreed that grouping impacting the drop-out rate (Table 15).

Table 16 – Faculty member results regarding access to rigor

Access to Rigor					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	1.6	1.7	1.7
	Agree	19	31.1	31.7	33.3
	Strongly Agree	40	65.6	66.7	100.0
	Total	60	98.4	100.0	
Missing	System	1	1.6		
Total		61	100.0		

In contrast, statement 14: Most higher-achieving students should have access to a rigorous curriculum, had a strongly affirmative response, with 98.4% of participants selecting agree or strongly agree (Table 16).

Table 17 – Faculty member results regarding differentiation

Differentiation					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	3	4.9	4.9	4.9
	Undecided	4	6.6	6.6	11.5

Differentiation

	Agree	31	50.8	50.8	62.3
	Strongly Agree	23	37.7	37.7	100.0
	Total	61	100.0	100.0	

Another statement that yielded strong affirmative responses was statement 15: I regularly utilize differentiated instructional strategies with 50.8% of participants who agreed, and 37.7% of participants who strongly agreed. Only 4.9% of the participants disagreed to the statement that they regularly utilize differentiation (Table 17).

Table 18 – Faculty member results regarding high expectations

High expectations

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	17	27.9	28.3	28.3
	Strongly Agree	43	70.5	71.7	100.0
	Total	60	98.4	100.0	
Missing	System	1	1.6		
Total		61	100.0		

Finally, another statement that yielded strong affirmative responses was statement 16: I have high expectations for higher-achieving students. For this statement, 100% of teachers either agreed of strongly agreed that they have high expectations for higher-achieving students (Table 18).

Focus Group Data

The purpose of conducting the focus groups was to collect qualitative data relating to research question one: What are teacher perceptions of how grouping impacts gifted and high achieving students? In addition to the quantitative data collected by the survey, the two focus groups consisting of a stratified purposeful sampling (Creswell, 2014) of six individuals provided a more thorough explanation of survey responses.

The focus groups followed a semi-structured format (Hays & Singh, 2012), and focus group members were provided with the focus group protocol and questions that the researcher wanted to answer (Appendices C and D). Throughout the course of the focus groups, all of the topics from the list of questions were addressed, though not necessarily in the order in which they were listed.

Focus group sessions were recorded and sent to the third party application, Rev, for transcription. Upon receipt of the transcripts, the researcher utilized member checking by sharing the transcripts with focus group members (Teddlie et al., 2009). After approval from group members, the researcher read through each transcript twice before coding. The researcher further established trustworthiness by reflexive journaling between coding sessions (Teddlie et al., 2009). The researcher used In Vivo codes for the first cycle codes (Saldana, 2009), writing analytic memos and codes directly on the transcript pages. Focus group transcript data was analyzed for School A first, followed by School B. The reason for this was because the focus group session for School A was held prior to the session for School B. After completing first cycle coding methods on data from School A and School B, the researcher compared coded data between the two focus group sessions, adding additional analytic memos to the data. At this point, the researcher uploaded all transcript data into qualitative data analysis software. The CAQDAS, or computer-assisted qualitative data analysis software, that was used was QDA Miner Lite. The purpose of this software was not to analyze the data, but to act as a repository for the data, so that the researcher may then code accordingly (Saldana, 2017). The data were entered as two cases within one data set. Then focused coding was used for second cycle codes in order to develop major categories or themes within the data (Saldana, 2009).

The major themes developed within the second cycle of coding aligned with the focus group questions that participants were given at the beginning of the focus group session. These categories were *Academic Performance, Personal and Social Effects, Equity, Discipline, Teaching,* and *Outside Variables*. There were rich data to emerge from both focus group sessions within all categories. The following is corresponding evidence that was provided during the sessions. These responses provided data relating to research question one: What are teacher perceptions of how grouping impacts gifted and high achieving students?

Academic Performance

Teachers in both sessions discussed the issues associated with achievement gaps and acceleration, as well as their perspectives on how grouping can impact the academic performance of gifted and high-achieving students. As was to be expected because of the purposeful stratified sampling of teachers, opinions varied in regards to the effects of grouping on the gifted and high-achieving student. One teacher expressed frustration at the heterogeneous classroom makeup by stating, “There's only so much a teacher can do when I have [special education students] in the same room with my highest gifted kids...We're struggling with the levels of children in our room” (School A). Within the same session, another teacher felt that homogeneous grouping was detrimental to all saying:

I think we're doing a disservice to the middle school student by not allowing them

> to be children and socializing them. I think when we do group them, when we take this gifted cluster and we put them all together, I think we're creating a monster, in middle school (School A).

When it came to specific benefits of acceleration on academic achievement for gifted and high achieving students, even the strongest supporters of heterogeneous grouping recognized that there was an academic benefit for those particular students, saying, “The grouping, it did work out great for the high-achieving kids...on an academic level” (School A). Further evidence that was provided was:

> Those kids that are high performing can be pushed. You can cover content faster but those that are at the lower end of the spectrum, you have to break it down into smaller increments and go slower. In that respect, I think that the high-achieving students should be held together (School B).

This was one generalization that teachers were able to find a consensus in agreement.

Another concept related to the theme of *Academic Performance* that teachers frequently returned to was classroom dynamics. Teachers repeatedly emphasized that many variables can affect academic performance, and teacher effectiveness was a key point. One teacher noted:

> If you take a gifted student and put that student in [one teacher’s] class, then take that same gifted student and take him to another teacher that is not as effective… You may not get the same results. You get the same kid. You have the same mind. You have the same brain power, intelligence, but you have this dynamic of a different teacher. I think there are so many different nuances and dynamics that are in play here (School A).

Along with teacher effectiveness, student personalities can influence academic achievement. Another teacher from school B shared:

> I had a gifted cluster in two classes last year and I have a gifted cluster in a group this year. It was amazing how, even though data-wise on paper the classes are number similar, the blend of personalities made a difference, where within one group the gifted kids really were high growth. They were high-achieving. They were moving everybody around them. Then in another group they were those laid back gifted kids... It wasn't that they were being held back by what we were doing in the classroom but that they would almost hold themselves back.

While nearly all teachers agreed that there were many variables that affect academic performance, classroom dynamics was emphasized as a critical component for success.

Personal and Social Effects

A major theme that developed during the sessions was that of *Personal and Social Effects* due to the negativity associated with labels that can occur when high achieving students are grouped by ability. One teacher commented, “There should never be a smart kids' room or a dumb kids' room. It's every kids' room” (School B), while another noted:

> You're placing these kids who are supposed to be high-achieving in high-achieving classes, and you're asking so much of them. They're thinking that they have to meet these expectations because their parents are wanting their report cards. The administrators are wanting high test scores. They're just so young. You're teaching them that grades and test scores are all that matter in life (School A).

There was minimal commentary on the beneficial labels that are associated with acceleration.

In both sessions, teachers commented on the increased pressure that accelerating middle school students can have on developing adolescents. Strongly held opinions were expressed regarding this particular topic, with one teacher saying, “I think we're trying to make the kids grow up too fast... Let them be kids. Let them learn how to work. Let them work with all kinds of people and accelerate when you get to the high school” (School A). All teachers expressed a belief that gifted and high-achieving students need rigor and challenge, though not all were in agreement about the best grouping structure for that learning to take place. One teacher commented:

> They are ready for that AP…. They're ready for higher-level learning. They cannot get that in a class when the teacher's stretched so thin that she's trying to teach a kid how to multiply fractions with a kid who's ready to do trigonometry. You just can't do that (School A).

In contrast, another teacher commented, “I think it just comes down to the individual kid… I've got a highly gifted kid that we didn't move [into a homogeneous setting]. She is more comfortable with that mixed ability group. She can lead within there” (School B).

The idea of socialization was also developed, with all teachers agreeing that socialization is an important aspect of middle school learning. For example, one teacher claimed:

> I do think that mixing gifted students in with the masses can be good on a social level. Sometimes they have an elitist attitude and it is good for them to be brought down a notch and be with others that are unlike them. I do not think that math class is the place for this to happen though (School B).

There was some disagreement on the best grouping scenario for gifted and high achieving students; some argued that socialization occurs in all classes, while others thought that homogeneity was not reflective of the real world.

Social Comparison Theory, the theoretical framework for the current study, supported and informed the idea of reality through the collected data. For example, the idea of individuals seeking out like-minded peers was brought up and discussed, as one teacher pointed out:

> When you have those clusters in a heterogeneously mixed group, a lot of times the high-level kids flock to one another when they're given the choice. I've noticed when I've had [special education] kids in the past they want to be together. It's not about 'I want to be on the winning team.' It's about 'I want to be with my friends that I'm comfortable with over there' (School B).

This was further illustrated by commentary about performing similarly to one's peers, as one teacher noticed, "He kept his GPA up...around people like him who pushed him to do better. The friends he has are gifted and he behaves like them" (School A).

Ultimately, both sessions developed the theme of *Personal and Social Effects* of ability grouping on gifted and high achieving students. Negative effects, such as pressure and labels that are harmful for adolescents, were mentioned, as well as the varying opinions regarding socialization.

Equity

The theme of *Equity* was an idea that was frequently debated in the sessions. The root of the argument seemed to stem from the effect that homogeneous grouping of gifted and high achieving students had on average and low performing students. One such example was illustrated by a teacher who said, “When I took my higher achieving kids out [of the classroom], my low kids just quit” (School A). This was an opinion that several teachers supported in both focus groups sessions; one teacher said, “You can't bring them up if they don't have anything to push towards” (School B). Most teachers agreed that having gifted and high achieving students in class provided other students with an example.

The concept of whom the grouping was beneficial for was also debated. Some felt that the gifted and high achieving students helped classroom climate; one teacher said, “I feel that the highly intelligent, gifted child, they're going to get it, and they're going to make it any situation you put them in. Where the low-level struggling student, they're not” (School A). Another teacher added:

> The low will try to come to be the median. They'll work up to be the middle. But a lot of times you find what I call the middle high. A lot of times you see them working to be with the gifted. If you pull the gifted out of that class, are you doing a disservice to that middle? (School A).

In contrast, some teachers felt that keeping gifted and high achieving students in regular classes was detrimental to their students saying, “I can give them more work, or I can come up with a new book for them to read, but it's not fair. How fair am I being to those high kids?” (School A). All in all, teachers held mixed opinions regarding the theme of *Equity* when dealing with the topic of ability grouping for gifted and high achieving middle school students.

Discipline

Varying opinions were expressed regarding the theme of *Discipline* and grouping for gifted and high achieving students. Some felt that heterogeneous grouping elicited negative behaviors for gifted and high achieving students saying, “In my opinion, we are doing these kids a disservice. Many are bored and misbehave. Many are bored and quit trying. Others wind up becoming tutors, which is not fair if it happens all the time” (School B). Though supporters of heterogeneous grouping felt that gifted behavior was improved upon when in a mixed ability setting, one teacher claimed, “With heterogeneous grouping again, I've had a group where I had a gifted cluster, I had a lower achievement cluster and then a mixed middle. We rocked and rolled. It was great” (School B). Teachers expressed alternative views regarding behavior in both focus group sessions.

Another concept that was discussed relating to grouping and behavior was the impact of homogeneous grouping. Some felt that a homogeneous grouping structure created negative behaviors in average and low performing students. One example that was provided was, “Back in the day, when we had ability groups, nobody wanted the bottom group because you had all the behavior problems in one room” (School A). A negative perception about homogeneous grouping of gifted and high achieving was that they were described as talkative and outspoken, which can be overwhelming for some teachers.

Though teachers felt that grouping for gifted and high achieving middle school students did have an impact on discipline, the ability levels of students did not have as much of an effect on behavior as self-discipline, motivation, and personalities. One teacher believed, “I don't think grouping plays a part really… It goes back to motivation, who your teacher is and how much effort you put into it.”

Teaching

One of the most frequently referenced ideas during the focus group sessions was discussion of the middle school concept. One teacher said, “The middle-school concept is about exploring that middle-school child and finding where their strengths and weaknesses are” (School A). Middle school concept means that there is a focus on adolescent development that includes challenging, relevant curriculum while fostering a school climate of support and community (National Middle School Association, 2010). Opinions were mixed about the best grouping structure for middle school students; some teachers felt that homogeneous acceleration provided relevant rigor, while some teachers felt that pushing students in middle school worked against the concept of supporting the developing adolescent. One teacher argued:

> Junior high school would probably be better as far as ability grouping… To have the true middle-school concept, if we are what we say we are, it should be the whole child. But...I really do think that they're pushing them too far (School A).

Another topic that most teachers agreed on regarded which content areas were better suited for homogeneous versus heterogeneous instructional settings. Those who had an opinion on the subject stated that science and social studies classes should be heterogeneously grouped; whereas, math and language arts should be homogeneously grouped according to ability. One teacher explained this by saying:

> The thing with social studies, they're learning material. They're learning concepts, but they're learning that through the material. The material, you learn it by discussion. It's good to have gifted kids with low there, because they help the discussion go. They're going to get what they need. I totally think, in social

> studies, I would go with heterogeneous...But, when I'm doing language arts, and I've got kids who can't read or can't write, and I've got them in there with gifted, I cannot be with all thirty kids at the same time. The minute I turn my back to help one kid on one thing, I've got twenty others that are finished, then they try to get the kids to talk. That's what they want to do. They're done. They're finished, and I'm trying to come up with a different lesson for them (School A).

Regarding math, the grouping structure was attributed to the need for pacing, as one teacher pointed out:

> Heterogeneous grouping is not beneficial to them as far as math is concerned. Pacing is important and it is simply not possible to increase the pace in math without leaving many other students behind. While I differentiate when possible, it is difficult and rare to find activities that are truly differentiated for gifted math students that are in regular classes (School B).

Differentiation was another idea that cropped up several times in both focus group sessions, with very different opinions regarding it. While some claimed that differentiation made all grouping structures successful and claimed that, “Differentiation is key” (School B), others felt that differentiation was not the answer for achieving student success and stated:

> I think differentiation in general is great on paper but the planning of it is so very detailed and takes so much time. That's one of our biggest constraints is time and so it makes it difficult to carry it out within the class (School B).

So, when teachers are faced with a heterogeneous grouping of students, to whom do they teach? As with most things regarding grouping, this idea yields mixed responses. One teacher said, “They're going to get it. We're going to teach to [the] low because the highs will get it” (School A); whereas, another teacher said, “Regardless of what you have... You've got to teach to the top” (School A).

The theme of *Teaching* was discussed in both focus groups, with particular emphasis on different instructional needs of academic areas, differentiation, middle school concept, and the notion of whom to target to teach within a heterogeneous setting.

Outside Variables

The final theme that was developed in the focus groups was that of *Outside Variables*. Though the idea has been touched upon with dynamics, many teachers expressed their belief that much determines gifted and high achieving student achievement outside of the grouping structure. Outside variables that teachers stated affected achievement were class size, class structure, student personalities, teacher and co-teacher relationships, scheduling, parental influence, extracurricular activities, and connection/elective classes.

One notion that was mentioned was that of a looping team, where the same team of students remain with the same group of teachers for sixth, seventh, and eighth grade. A teacher that felt strongly in support of looping commented:

> Personally, I don't think it would matter if they were homogeneously grouped or heterogeneous grouped if they were in a looping system. I have looped before and I've had a heterogeneous group of students which we took them and we homogeneously grouped them for a period of time to see the differences. There was not that much difference in terms of achievement because when it came down to it from year to year there was that familiarity between us and them. They can't

> say, ‘My teacher last year didn't teach me that,’ because I was their teacher last year. In the end it didn't matter where they fell in ability level. They all did well. It's all about the growth of that child. The growth of each child is going to be different (School B).

Another outside variable that was discussed was the influence of parental support and pressure. There was discussion about parental pressure being a negative repercussion for gifted and high achieving students, in contract to discussion that parental support creates a positive result in student achievement. For example, one teacher said, “You see a lot of times too with your lower-ability kids, they don't have parental support and home support that your upper level kids do to push them and to [accelerate] them at home” (School B).

Teachers discussed the inequity of grades, the influence of scheduling, the benefits of structured activities outside of school and during connection classes, and the impact that personalities can have on a classroom. All in all, teachers in both focus groups agreed that there were many aspects that determined the academic achievement of students, particularly gifted and high achieving middle school students. While some felt that homogeneous acceleration was critical for academic success within certain content areas, others argued that effective middle school teachers can make the same academic gains regardless of the grouping structure. One teacher, when prompted by the researcher to comment on how much grouping mattered, responded by saying, “I don't think it does” (School B).

Trustworthiness was developed by member checking transcripts with group members and be undertaking reflexive journaling while coding (Teddlie et al., 2009).

The qualitative data analysis software, QDA Miner Lite, was utilized for the data analysis process. The following table is the frequency count of codes according to categories from both focus group transcripts. Though there is much debate over the inclusion of frequency counts in qualitative data (Hays & Singh, 2012), the researcher decided to include this information as evidence of a summation of codes and themes from the focus group sessions (Table 19).

Table 19 – Frequency count of coded data from focus group sessions

Category	**Code**	**Count**	**% Codes**	**Cases**
Academic Performance	Achievement Gaps	17	7.50%	2
Academic Performance	Acceleration	14	6.10%	2
Academic Performance	Dynamics	22	9.60%	2
Personal and Social Effects	Negative Effects	18	7.90%	2
Personal and Social Effects	Socialization	7	3.10%	2
Personal and Social Effects	Social Comparison Theory	7	3.10%	2
Equity	Effects on lower performing students	8	3.50%	2
Equity	Beneficial for whom?	15	6.60%	2
Discipline	Gifted behavior in heterogeneous	3	1.30%	2
Discipline	Effects on behavior	8	3.50%	2

Category	Code	Count	% Codes	Cases
Discipline	Motivation	11	4.80%	2
Teaching	Middle School Concept	17	7.50%	2
Teaching	Academic Needs - Content Area	17	7.50%	2
Teaching	Differentiation	8	3.50%	2
Teaching	Teach to whom?	16	7.00%	2
Teaching	Learning	16	7.00%	2
Other Variables	Outside Variables	24	10.50%	2

Assessment Data

The purpose of analyzing student assessment data was to collect quantitative data that addressed research question two: Does student achievement and growth differ for gifted and high-achieving students according to student grouping? The information in this section is based upon the assessment data collected from the Statewide Longitudinal Data System (SLDS). According to the Georgia Department of Education (2015), SLDS provides teachers, schools, and districts with data-based information and resources. This information provides historical student data including assessment results, enrollment, classes, attendance, and grades.

The researcher collected information based upon content area, student grade, test year, school, average student growth percentile (SGP), average scale score, and average prior scale score.

The content areas and grades analyzed were the offered homogeneously accelerated and heterogeneously clustered curriculum: 8th grade math, 8th grade science, 8th grade language arts, 7th grade math, and 7th grade language arts (ELA). Sixth grade math was not analyzed, as there were no cluster-grouped classes to compare the accelerated achievement scores against. The test year was included because 8th grade math and 8th grade science information had to be retrieved from the 2014-2015 assessment. In 2016, accelerated students did not take the same assessment as clustered students. Accelerated students took the 9th grade End of Course (EOC) test, while clustered students took the 8th grade End of Grade (EOG) test in the content area. For the 2014-2015 school year, accelerated students took both an EOG and EOC assessment. In order to have a valid comparison, assessment data needed to come from the same test, and therefore, 2014-2015 assessment data were used for 8th grade math and science. For 7th grade math, 7th grade ELA, and 8th grade ELA, 2015-2016 assessment data was used.

All of the data was collected from School A and School B. After requesting the assessment information from the principals, the administration of School B indicated that due to their lower numbers of gifted students, no cluster groups are found in content areas where accelerated classes are offered. For this reason, there is no cluster grouped data from School B. All clustered grouped data came from School A; accelerated grouped data came from both School A and School B.

Scale Score

To address the portion of the research question regarding student achievement, the researcher initially analyzed student scale score data from End of Grade assessments and wanted to control for prior ability by using the prior scale scores as a covariate. The average scale score is the average achievement score earned by students, and the average prior scale score is the achievement score earned by students in the year preceding the assessment data under analysis. The most common and preferred statistical analysis for examining data for two-group pre-post designs is an analysis of covariance, or an ANCOVA (Johnson, 2016).

The researcher first screened the scale score data to ensure that it met the basic assumptions of a mixed model of variance. To begin, the researcher checked for missing data and outliers, and removed the student assessment data that were missing prior scale scores, which resulted in N=409, as opposed to what was originally collected, of N=411.

The initial analysis revealed the following:

There were nearly twice as much data for homogeneously accelerated grouping than for heterogeneous clustered grouping (Table 20).

Table 20 – Between-subjects factors, initial

Between-Subjects Factors			
		Value Label	N
Class	0	Accelerated	265
	1	Clustered	144

According to Fields (1999), a covariate should not overlap with the experimental condition. To test this question, the researcher ran an ANOVA with the covariate (prior scale scores) as the dependent variable. A nonsignificant result would indicate that prior scale score is independent of grouping. Fields (2009) recommends a test of whether a covariate is independent of the independent variable (class grouping structure) to determine whether a proposed covariate would function in explaining independent variance. A significant p-value indicates the variable would not work well as covariate in the model.

The result with the 2014-2015 data showed that prior scale score would not be a good covariate because it confounded with group membership. This meant that the treatment group (class grouping structure) was not independent of prior scale score, as they shared variance. Therefore, a one-way ANOVA was the appropriate test to run for this data set (Table 21).

Table 21 – Tests of between-subjects effects, covariate test, 2014-2015 scale score data

Tests of Between-Subjects Effects

Dependent Variable: Prior

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	13686.251[a]	1	13686.251	35.853	.000
Intercept	108277268.000	1	108277268.000	283649.470	.000
Class	13686.251	1	13686.251	35.853	.000
Error	59168.017	155	381.729		
Total	120878733.000	157			
Corrected Total	72854.268	156			

a. R Squared = .188 (Adjusted R Squared = .183)

However, prior scale score worked as a covariate with the 2015-2016 data set (Table 22).

Table 22 – Tests of between-subject effects, covariate test, 2015-2016 scale score data

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
C. Model	440.496[a]	1	440.496	.310	.578
Intercept	76928160.500	1	76928160.500	54207.497	.000
Class	440.496	1	440.496	.310	.578
Error	354785.611	250	1419.142		
Total	84236025.000	252			
C. Total	355226.107	251			

2014-2015 Analysis. To set up the factorial design, the scale score was the dependent variable and the fixed factor was class grouping structure. The researcher screened the data to ensure that it met the basic assumptions of a mixed model of variance (ANOVA), such as normality and homogeneity of variance (Johnson, 2016).

With a p-value=.208, the assumption of equality of variances was met (Table 23).

Table 23 – Levene's test of equality of error variances, 2014-2015 scale score data

Levene's Test of Equality of Error Variances[a]
Dependent Variable: Scale

F	df1	df2	Sig.
1.597	1	155	.208
Tests the null hypothesis that the error variance of the dependent variable is equal across groups.			
a. Design: Intercept + Class			

According to the one-way ANOVA, class grouping structure (p<.000) was significant, and accounts for approximately 16.7% variability in the scale score. This means that of all the things that can impact variability, 16.7% of that variability can be accounted for according to this test. According to this data, the students grouped in the homogeneously accelerated classes of 8th grade math and 8th grade science for the 2014-2015 school year outperformed students grouped in the heterogeneously clustered classes (Table 24).

Table 24 – Tests of between-subjects effects, 2014-2015 scale score data

Tests of Between-Subjects Effects						
Dependent Variable: Scale						
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected	47033.763[a]	1	47033.763	31.111	.000	.167

Tests of Between-Subjects Effects

Model						
Intercept	43024677.100	1	43024677.100	28459.218	.000	.995
Class	47033.763	1	47033.763	31.111	.000	.167
Error	234329.167	155	1511.801			
Total	48938112.000	157				
Corrected Total	281362.930	156				

a. R Squared = .167 (Adjusted R Squared = .162)

Table 25 illustrates that the average scale score on the end of year assessment was 36.4 points higher for gifted and high achieving students who were involved in accelerated homogeneous classes. It can be determined with 95% confidence that an accelerated student would outscore a clustered student by nearly 40 achievement points.

Table 25 – Average mean of scale score according to class grouping structure, 2014-2015 data

Class

Class				
Dependent Variable: Scale				
			95% Confidence Interval	
Class	Mean	Std. Error	Lower Bound	Upper Bound
Accelerated	569.233	3.831	561.665	576.801
Clustered	532.796	5.291	522.344	543.248

2015-2016 Analysis. For the statistical data analysis of student assessments, the researcher initially employed an analysis of covariance (ANCOVA). Prior to running this test, it was necessary to make two checks for assumptions of ANCOVA. These assumptions were one: that there was a linear relationship between the dependent variable (scale score) and the covariate (prior scale score), and two: that there was a homogeneity of regression slopes (Stevens, 1999). When assessing the assumption of homogeneity of regression slopes, the researcher focused on the interaction term (Class*Prior) in order to test the assumption of equality of regression slopes between the two groups (Johnson, 2016). In this case, there was a significant result, p-value of .000, which meant that this assumption could not be made. When heterogeneity of regression slopes occurs, an aptitude-treatment interaction effect has been discovered, and an alternative approach to ANCOVA must be pursued (Johnson, 2016). Based on Stevens (1999) recommendation, the covariate was transformed into a categorical variable and a two way ANOVA was run with prior scale score as an independent variable. For this reason, prior scale score was recoded according to performance (low, mid, high). For 2015-2016 prior scale results, low ranged from 492-555, mid ranged from 556-590, and high ranged from 591-717.

With a p-value=.449, the assumption of equality of variances was met (Table 26).

Table 26 – Levene’s test of equality of error variances, 2015-2016 scale score data

Levene's Test of Equality of Error Variances[a]

Dependent Variable: Scale

F	df1	df2	Sig.
.951	5	246	.449

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Class + Prior2 + Class * Prior2

According to the two-way ANOVA, prior score (p=0.000) was significant, and accounts for approximately 21% variability in the scale score. The class grouping structure (p=.389) and the interaction of class*prior score (p=.778) were not significant in regards to scale score. This data indicated that for the 2015-2016 school year in 8th grade language arts, 7th grade math, and 7th grade language arts, prior achievement on the end of grade assessment was a better indicator of student performance than the class grouping structure for gifted and high achieving students. The R Squared for this model was at 22%; this test explains 22% of what accounts for variability (Table 27).

Table 27 – Tests of between-subjects effects, 2015-2016 scale data

Tests of Between-Subjects Effects

Dependent Variable: Scale

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	66336.811[a]	5	13267.362	14.072	.000	.222
Intercept	25537998.000	1	25537998.000	27087.68	.000	.991
Class	701.285	1	701.285	.744	.389	.003
Prior2	61948.369	2	30974.185	32.854	.000	.211
Class * Prior2	474.504	2	237.252	.252	.778	.002
Error	231926.376	246	942.790			
Total	86133451.000	252				
Corrected Total	298263.187	251				

a. R Squared = .222 (Adjusted R Squared = .207)

Figure 1 provides a visual representation of the data. Though there was not a significant difference according to class grouping structure, there was a difference in the data according to prior year scale score based upon low (0), mid (1), or high (2) scale score performance.

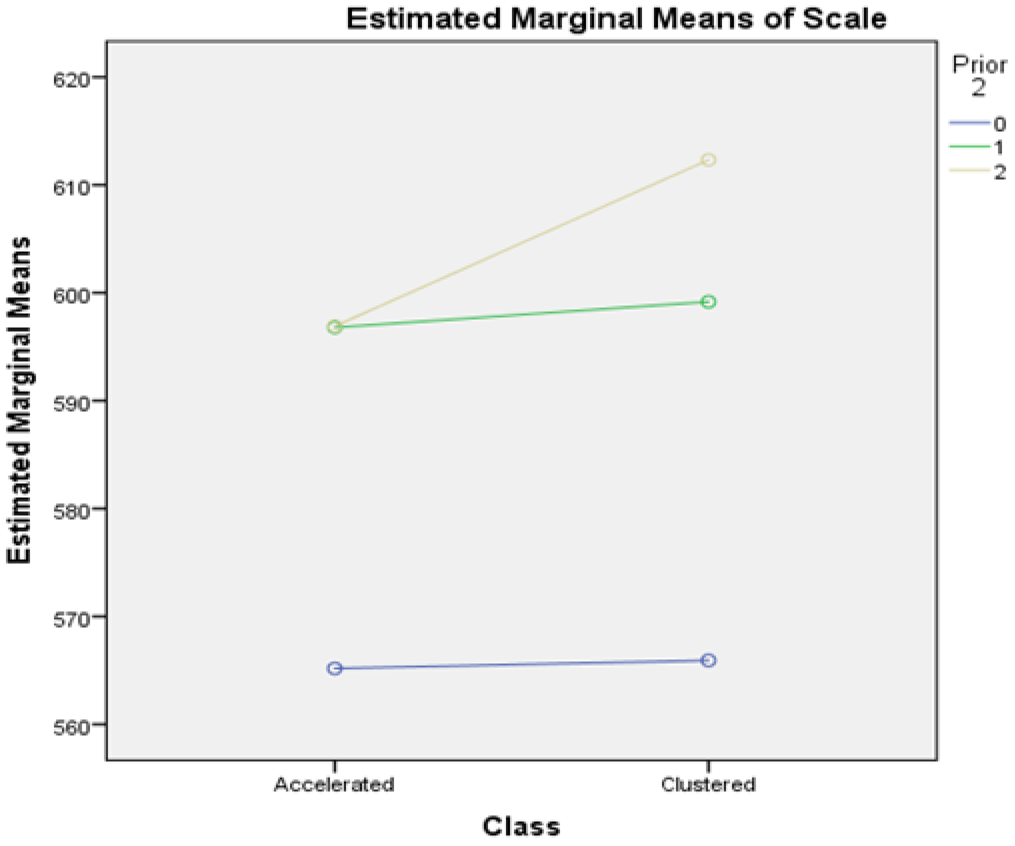


Figure 1 – Difference in scale score according to class grouping structure, 2015-2016 data

According to the data, the average scale score for the homogeneously accelerated group was 586; whereas, the average scale score of the heterogeneously clustered group was higher at 592. Though this is not a significant result because the confidence intervals overlap, the higher-achieving group in 2015-2016 was the heterogeneously clustered students (Table 28).

Table 28 – Average mean of scale score according to class grouping structure, 2015-2016 data

Class				
Dependent Variable: Scale				
			95% Confidence Interval	
Class	Mean	Std. Error	Lower Bound	Upper Bound
Accelerated	586.299	3.396	579.611	592.987
Clustered	592.476	6.306	580.056	604.897

Student Growth Percentile

The second aspect of answering this research question addressed student growth; in order to analyze this, the researcher focused on the SGP data. The Average SGP is for the Average Student Growth Percentile (SGP). “SGPs describe the amount of growth a student has demonstrated relative to academically-similar students from across the state” (Georgia Department of Education, 2015). The benefit of having SGPs is that they allow for a growth measurement at all ability levels, not only linked to achievement. Additionally, these scores are tied to teacher evaluation measures and are significant data for accountability.

Before running this analysis, it was necessary to undergo the same screening procedures for both data sets of 2014-2015 data and 2015-2016 data. Since the only prior indicator for student ability provided was the prior scale score, the only way to control for prior ability was by using the prior scale score. Therefore, the covariate test results were the same as those conducted prior to running the scale score data. (See tables 21 and 22 for reference.)

2014-2015 Analysis. The researcher set up another factorial design for 2014-2015 data, with the SGP score as the dependent variable and the fixed factor of class grouping structure.

With a p-value=.764, the assumption of equality of variances was met (Table 29).

Table 29 – Levene's test of equality of error variances, 2014-2015 SGP data

<table>
<tr><th colspan="4">Levene's Test of Equality of Error Variances[a]</th></tr>
<tr><td colspan="4">Dependent Variable: SGP</td></tr>
<tr><td>F</td><td>df1</td><td>df2</td><td>Sig.</td></tr>
<tr><td>.090</td><td>1</td><td>155</td><td>.764</td></tr>
<tr><td colspan="4">Tests the null hypothesis that the error variance of the dependent variable is equal across groups.</td></tr>
<tr><td colspan="4">a. Design: Intercept + Class</td></tr>
</table>

According to the one-way ANOVA, class grouping structure (p=.252) was not significant to student growth. The R Squared for this model was very low, at less than 1% (Table 30). Such a small R Squared could mean that this variable has a very small influence on SGP.

Table 30 – Tests of between-subjects effects, 2014-2015 SGP data

Tests of Between-Subjects Effects

Dependent Variable: SGP

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	1230.441[a]	1	1230.441	1.320	.252	.008
Intercept	301815.944	1	301815.944	323.779	.000	.676
Class	1230.441	1	1230.441	1.320	.252	.008
Error	144485.788	155	932.166			
Total	493564.000	157				
Corrected Total	145716.229	156				

a. R Squared = .008 (Adjusted R Squared = .002)

Although the R Squared is minimal, the average for SGP was higher for the accelerated group at 49% compared to 43% for the clustered group (Table 31).

Table 31 – Average mean of SGP score according to class grouping structure, 2014-2015 data

Class

Dependent Variable: SGP

Class				
			95% Confidence Interval	
Class	Mean	Std. Error	Lower Bound	Upper Bound
Accelerated	49.097	3.008	43.154	55.040
Clustered	43.204	4.155	34.996	51.411

2015-2016 Analysis. An ANCOVA was attempted, but could not meet the assumption of homogeneity of regression slopes; therefore, the researcher set up another factorial design, with the SGP score as the dependent variable and the fixed factors as prior scale score and class grouping structure. Data from the 2015-2016 school year revealed the following:

With a p-value=.487, the assumption of equality of variances was met (Table 32).

Table 32 – Levene's test of equality of error variances, 2015-2016 SGP data

Levene's Test of Equality of Error Variances[a]			
Dependent Variable: SGP			
F	df1	df2	Sig.
.891	5	246	.487
Tests the null hypothesis that the error variance of the dependent variable is equal across groups.			
a. Design: Intercept + Prior2 + Class + Prior2 * Class			

According to the two-way ANOVA, prior scale score (p= .031) was significant. The class grouping structure (p=.347) and the interaction of class*prior score (p=.761) were not significant in regards to SGP. According to this data, prior ability determined the rate of student growth. The R Squared of this model was 6.5% (Table 33).

Table 33 – Tests of between-subject effects, 2015-2016 SGP data

Tests of Between-Subjects Effects

Dependent Variable: SGP

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	13611.412[a]	5	2722.282	3.415	.005	.065
Intercept	212539.943	1	212539.943	266.631	.000	.520
Prior2	5597.066	2	2798.533	3.511	.031	.028
Class	2073.335	1	2073.335	2.601	.108	.010
Prior2 * Class	560.738	2	280.369	.352	.704	.003
Error	196094.143	246	797.131			
Total	1034850.000	252				
Corrected Total	209705.556	251				

a. R Squared = .065 (Adjusted R Squared = .046)

Figure 2 provides a visual representation of the data. Students who scored lowest (0) on the prior year scale score showed greater growth than students who scored mid (1) and high (2) on the prior year scale score. Also, according to this data, students who were in the heterogeneously clustered grouped model demonstrated higher SGP than students who were in the homogeneously accelerated classes. However, the small effect size for difference could indicate that the difference in mean is due to sampling and not a true difference in results.

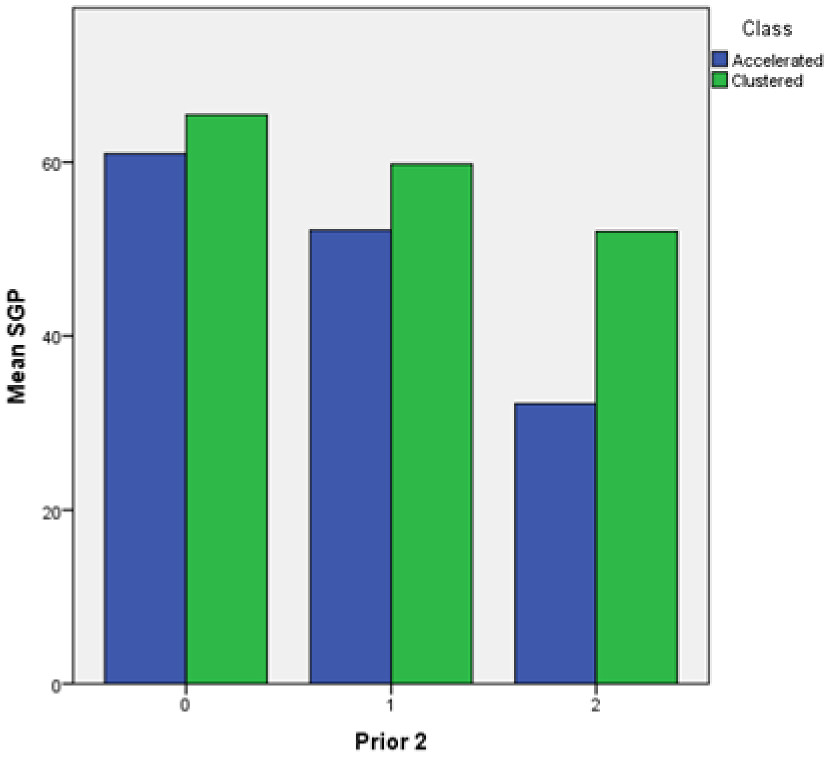


Figure 2 – Comparison of SGP and prior scale data, according to grouping structure, 2015-2016

Relationship Data

The purpose of this section was to analyze quantitative data relating to research question three: What is the relationship between teacher perceptions and data of student achievement and grouping for gifted and high achieving students? In order to identify this relationship, it was necessary for the researcher to evaluate the quantitative data that was collected regarding teacher perceptions and that would most closely align with the quantitative data regarding student achievement. Based upon the teacher survey, the most appropriate statement regarding student achievement was statement one: Heterogeneous grouping increases the academic achievement of most higher-achieving students. As this was a Likert-scale item, these data were entered as values of strongly disagree - 0, disagree - 1, undecided - 2, agree - 3, strongly agree - 4. Since this statement dealt specifically with academic achievement in heterogeneous grouping, the researcher selected student data that indicated academic achievement in heterogeneous grouping. This meant that only data that contained heterogeneously clustered student achievement data, or scale score, were included. When all of the 2014-2015 and 2015-2016 student data were combined, and all of the homogeneously accelerated student data were eliminated, there were 144 sets of student data. Since there were only 61 teacher responses, the researcher organized the remaining student data based upon the highest scale scores in descending order. That meant that the top 61 cluster-grouped students, according to scale score, would have their achievement score data analyzed. All other data were removed for this test, so that there would be an equal sample size of N=61 for both variables.

Since all accelerated student data were removed, there was no need to compare class grouping structure as an independent variable. A simple linear regression (Field, 2009) was performed to determine if there was a significant relationship between teacher perceptions and student data regarding heterogeneous grouping structures for gifted and high achieving middle school students. The dependent variable was scale score for the 61 heterogeneously clustered students with the highest scale scores; the independent variable was the teacher perspective response according to the 61 participants.

According to the output, there were 61 sets of data for scale score and teacher perceptions of academic achievement. The average scale score for these students was 603, and the average for teacher perceptions was 1.9, which indicated that teachers leaned towards disagreement of this statement (Table 34). This was already established in the prior findings from the teacher survey.

Table 34- Descriptive statistics, relationship regression

Descriptive Statistics			
	Mean	Std. Deviation	N
Scale	603.1967	24.73177	61
Academic Achievement	1.9	1.15	61

Initially, the model summary indicated that there was a .197 correlation between all of the variables, and the R Squared was 4% (Table 35). Though there is no set standard as to how large the coefficient of determination should be in order to predict a meaningful proportion of variation, it can be used as a test of significance and to measure effect size; which, in this case, was small (Lomax & Hahs-Vaughn, 2012).

Table 35 – Model summary, relationship regression

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.197a	0.039	0.023	24.45023
a Predictors: (Constant), Academic Achievement				
b Dependent Variable: Scale				

According to Field (2009), there are several assumptions that must be met when running a regression, one of which is the assumption of no multicollinearity. This can be assessed by using the Variance Inflation Factor (VIF). The VIF value for teacher opinion on heterogeneous grouping increasing academic achievement for most higher-achieving students was 1.00, which meant that there was no cause for concern and the assumption was met.

The next test for assumption was to examine the residual statistics for extreme cases (Field, 2009). Case number 1 needed to be investigated further, since it had a standardized residual at greater than four (Table 36).

Table 36 – Casewise diagnostics, relationship regression

Casewise Diagnostics				
Case Number	Std. Residual	Scale	Predicted Value	Residual
1	4.15	700	598.538	101.46201
a Dependent Variable: Scale				

Next in assumption analysis was to review case summaries. When the case summaries were analyzed, none of the data indicated a Cook’s distance greater than 1, and therefore, none of the cases had an undue influence on the model. Since the average leverage is calculated as the number of predictors (k) + 1 divided by the number of cases (n), the average leverage for this model was 3/61, or 0.05. All of the cases were within the boundary for leverage. Finally, Mahalanobis distance values greater than 15 are problematic; there were no values higher than 3.32688 evident in this data (Field, 2009). This evidence suggested that there were no influential cases within this data.

According to the DFBeta statistics, an absolute value greater than one is predictive of a problem that indicates that a case could have a large influence on the regression parameters (Field, 2009). All of the values were within a positive one or negative one, and show that these cases have no undue influence over the regression parameters.

Another assumption that needed to be tested was the covariance ratio, and the following criteria was used:

$CVR > 1 + [3(k + 1)/61] = 1.15$ and $CVR < 1 – [3(k + 1)/61] = 0.85$

In evaluating these cases for substantial deviation from these boundaries, case one was the only one that reported outside at 0.52; however, considering the Cook's distance for this case (0.28), this was an acceptable margin (Field, 2009). Therefore, according to this set of diagnostics, this was evaluated as a fairly reliable model without being unduly influenced by any subset of cases.

In order to test the normality of residuals, the researcher analyzed the histogram and normal probability plot (Field, 2009). The histogram should look like a normal distribution, and it did, though slightly skewed, as evidenced below (Figure 3).

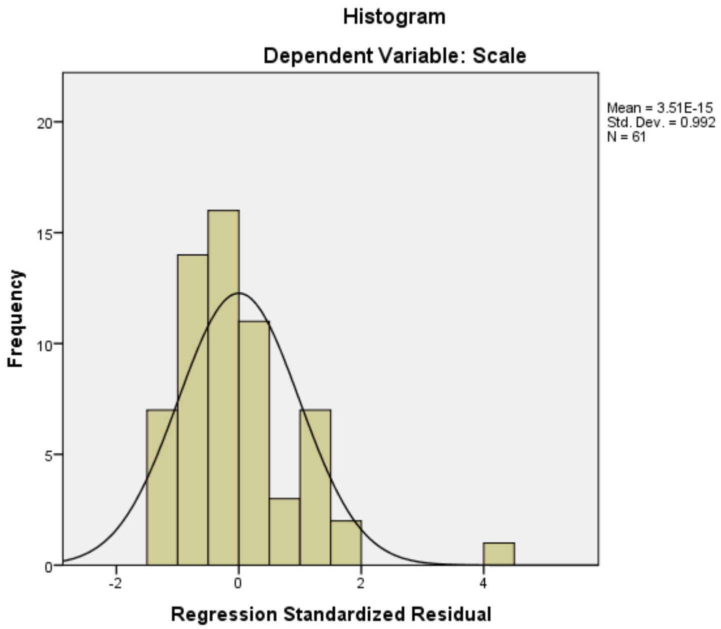


Figure 3 – Regression histogram

Additionally, the normal probability plot shows minor deviations from normality. A straight line indicates a normal distribution, and the points represent observed residuals (Field, 2009). This second graph illustrated a normality of residuals, as evidenced below (Figure 4).

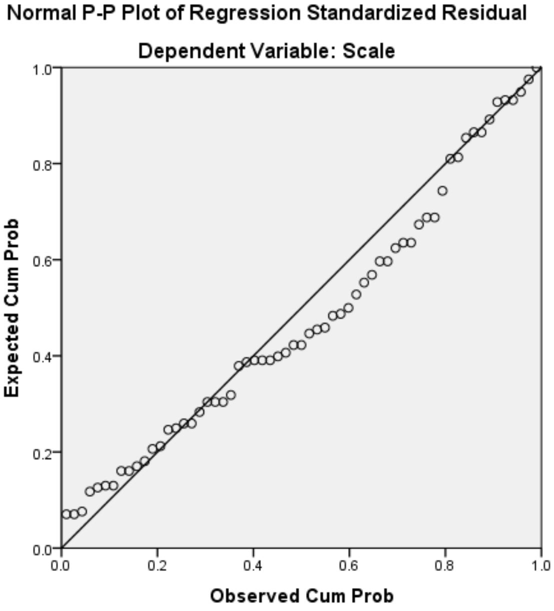


Figure 4 – Regression p-p plot

That being said, when the researcher graphed a scatterplot of the standardized residual and the standardized predicted value, there did appear to be a pattern at some points on the plot, as indicated below. This indicated that there were probably violations of both homogeneity of variance and linearity (Figure 5).

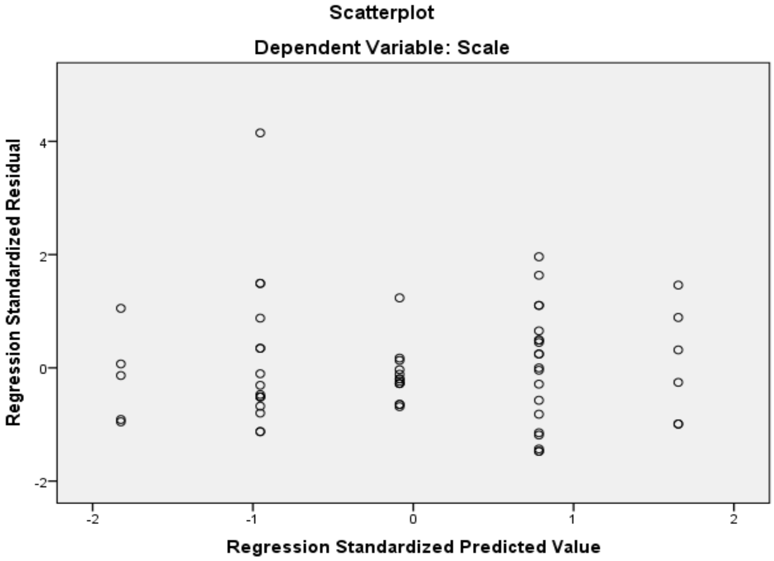


Figure 5 – Regression scatterplot

Despite those violations, this could be recognized as a good model for data, considering the lack of outliers and influential cases (Field, 2009). Therefore, according to this data and for this sample, teacher perceptions regarding heterogeneous grouping increasing the academic achievement of gifted and high achieving students shares a relationship with class grouping structure and student scores.

Data Analysis

The purpose of this study was to answer the following research questions:

1) What are teacher perceptions of how grouping impacts gifted and high achieving students?

2) Does student achievement and growth differ for gifted and high-achieving students according to student grouping?

3) What is the relationship between teacher perceptions and data of student achievement and grouping for gifted and high achieving students?

In order to answer these questions, quantitative and qualitative data were collected and analyzed from a variety of sources: teacher surveys, teacher focus groups, and student assessment data. The following data analysis is divided into these corresponding sections.

Teacher Surveys

After receiving IRB permission to conduct the study, the researcher spoke to both faculties at School A and School B during faculty meetings on separate days. Teachers received informed consent forms and were notified of the purpose and design of the study. Surveys were distributed via Google forms to certified faculty of both facilities, and participants were given a two-week window in which to record responses. The survey was originally piloted in the dissertation study, “Teacher perceptions of the impact of heterogeneous grouping on improving student achievement” (Rimmer, 2010), and consisted of sixteen Likert-scale items related to teacher perceptions of heterogeneous grouping of gifted and high achieving students.

There were 89 members of faculty between both campuses that received the survey, and 61 participants responded; this resulted in a response rate of 69%. Participants were also asked to indicate on the survey if they were willing to participate in a follow-up focus group session regarding teacher perceptions of grouping for gifted and high achieving middle school students. This information, paired with individual responses, allowed the researcher to construct stratified purposeful samples of willing and knowledgeable participants for both focus groups (Creswell, 2014). Prior to the focus groups, the survey data was analyzed for descriptive frequencies using the statistical analysis program, SPSS. This information can be found in the “Findings” section of this chapter. The following information is an analysis of data from those findings.

There were several statements from the survey on which the majority of participants were in almost total agreement. Statement 16, I have high expectations for higher-achieving students, received a 100% affirmative response rate from teachers. Teachers also felt favorable towards statement 14, most higher-achieving students should have access to a rigorous curriculum, with an affirmative response rate of 98.6%. Additionally, for statement three, I often encourage higher-achieving students to take challenging courses, there was an affirmative response of 96.7%. This indicates that teachers are in agreement that gifted and high achieving students should be academically challenged and held to a high standard of academic performance.

There were several other statements that yielded a majority of affirmative responses from teachers. Statement 15, I regularly utilize differentiated instructional strategies, had a positive response rate of 88.5%. A combined total of 63.9% of participants agreed or strongly agreed with statement nine, I frequently increase the pace of instruction to address the needs and abilities of higher-achieving students. This may explain why statement six, the pace of instruction should be increased to accommodate higher-achieving students in heterogeneous groups, yielded an affirmative response of 62.3%. Though there was not as much consensus, there was still a majority of agreement at 52.5% for statement five, Heterogeneous grouping increases the academic skills and abilities of lower-achieving students. Finally, statement 12, Heterogeneous grouping has a positive effect on the social and emotional growth of most higher-achieving students, had an overall affirmative response of 50.8%. The similarity between these responses is that they deal directly with teaching (differentiation, instructional pace) and consideration beyond academic achievement for gifted and high-achieving students (lower-achieving students, social and emotional growth); the data revealed positive perceptions regarding these concepts and heterogeneous grouping for gifted and high achieving students.

There were a couple of statements in which the majority of participants were undecided. Statement 10, heterogeneous grouping increases attendance for most higher-achieving students, yielded an undecided response rate of 52.5%. The other statement was statement 13, heterogeneous grouping reduces the number of higher-achieving students that drop out of school, with 50.8% undecided responses. This indicates that teachers are unsure of the impact that grouping has on attendance and withdrawal from school for gifted and high achieving students.

The majority of statements yielded mixed results from participants. The very first statement, heterogeneous grouping increases the academic achievement of most higher-achieving students, had 42.6% in disagreement, 34.4% in agreement, and 23% undecided. This indicated that though more teachers disagreed that heterogeneous grouping increases academic achievement of most higher-achieving students, many teachers think that it does, and nearly a quarter of those surveyed were not sure of the effect that grouping had on students.

Another statement that was debatable for teachers was statement two, heterogeneous grouping increases student engagement for most higher-achieving students. While 44.3% of participants were in agreement with this statement, 37.7% were in disagreement, and 18% were undecided. An equal number of participants, 8.2%, selected strongly agree and strongly disagree. This indicated that there were teacher perspectives all along the spectrum of agreement in regards to heterogeneous grouping increasing student engagement for higher-achieving students.

The next statement that yielded mixed results was statement four, heterogeneous grouping increases understanding of concepts for most higher-achieving students. In fact, the results for this statement were nearly balanced in opposition: strongly disagree, 6.7%; disagree, 35%; undecided, 18.3%; agree, 33.3%; strongly agree, 6.7%. This proved to be one of the most debatable statements, as perspectives were so varied and balanced regarding heterogeneous grouping increasing the understanding of concepts for gifted and high achieving students.

Statement seven, heterogeneous grouping decreases the participation rates of most higher-achieving students, yielded results indicating that 44.3% were in disagreement, 37.7% were in agreement, and 18% were undecided. Though more teachers disagreed with the idea that heterogeneous grouping decreased participation from higher achieving students, the margin of majority is very slim 6.6% difference between agreement and disagreement (when excluding undecided).

In regards to discipline as put forth by statement eight, heterogeneous grouping decreases classroom discipline issues for most higher-achieving students, more teachers were in disagreement (42.6%), than teachers who were undecided (29.5%), and those in agreement (27.9%). This indicated that more teachers felt that heterogeneous grouping did not decrease classroom discipline issues for high achieving students, than those who were unsure, or those who felt that it did.

Finally, statement eight, heterogeneous grouping increases equity for most higher-achieving students, yielded mixed results as well. While 41% were in disagreement with the statement, 32.8% were in agreement with it, and 26.2% were undecided about it. Though this indicated that more teachers felt that heterogeneous grouping did not increase equity for most high achieving students, many felt that it did increase equity, and others were unsure. All of the statements that yielded mixed results dealt with concepts of the academic, behavioral, and equitable benefit of heterogeneous grouping for gifted and high achieving students: academic achievement, student engagement, understanding of concepts, class participation, discipline, and equity.

Teacher Focus Groups

Focus groups were designed as purposeful samples (Creswell, 2014) of faculty, in order to get a varied expression of perspectives regarding grouping. According to the prior collected data from the surveys, two individuals who were supportive of homogeneous grouping, two individuals who were supportive of heterogeneous grouping, and two individuals who were neutral were asked to participate in the focus group sessions for each school. Participants were notified via email about the time, date, and location of the focus group prior to the session (Appendix D). Participants also received the focus group protocol, interview questions, and informed consent prior to the session (Appendix B and C). Having this difference in perspectives allowed for a variety of responses from all participants and provided rich data for analysis.

The focus group session feedback related to research question one: What are teacher perceptions of how grouping impacts gifted and high achieving students? The major themes that developed during the focus groups were *Academic Performance, Personal and Social Effects, Equity, Discipline, Teaching,* and *Outside Variables*. The following is data analysis that was provided during the sessions.

The theme of *Academic Performance* was developed as teachers expressed perceptions relating to the need for academic challenge for gifted and high achieving students. Because of the design of the sample, there were varying levels of perspectives relating to gifted and high achieving student performance. While some felt that “we’re not pushing the higher ones” (School B) without homogeneously accelerated classes, others felt that the accelerated classes were inappropriate in middle school because “they’re not going deeper, they’re just going faster…Are they really getting it, or are they just moving through it?” (School A). The concepts within this theme that teachers did agree upon were that achievement gaps are evident between students, and variables such as teacher effectiveness and class dynamics were critical components in effective classrooms, regardless of grouping structure.

The theme of *Personal and Social Effects* was developed by shared perspectives relating to the negative labels and pressure that certain classes can create as well as the importance for socialization for middle school students. Since the population under examination for this study was middle school, the conversation frequently returned to the developmental needs of adolescents. Some shared the perspective that students of this age lacked the maturity that an accelerated curriculum requires, saying “There’s a developmental aspect to this. They’re not ready…I think you can push a kid too much” (School B). Continuing that line of reasoning, another participant commented that “I think ninth grade is the place that the real world begins” (School A). On the other hand, some shared the perspective that not providing homogeneously accelerated courses for gifted and high achieving students results in denying them opportunities, saying “He needed the accelerated and he was heterogeneously grouped” (School B) as well as “Some of our kids in eighth grade are ready. They are ready for that AP” (School A). In terms of socialization, all felt that “They should be learning how to work with others” (School A) but there was disagreement on what settings were the best scenario for that to happen. Some felt that social growth occurs in all classes and that even accelerated classes have levels within levels (School B), while others felt that it was more important for there to be greater variability in abilities in order to expose all students to all types of learners and, therefore, people.

The theme of *Equity* was developed by the discrepancy between finding the balance for all students. Many teachers felt that higher achieving students deserved an opportunity for academic acceleration, while many others felt that removing high achieving students from classes spelled doom for those who remained. This was a contentious topic with advocates on both sides of the debate. While one participant voiced that gifted and high achieving students would learn on their own regardless of the setting, another participant countered with “You can’t let them go. Those are the kids that are the doctors and lawyers of the world. These are the people that solve problems of the world” (School A). Similar to the concept of equity as addressed in the teacher survey, teachers shared perceptions of a split belief in regards to equity for students.

The theme of *Discipline* was developed by conflicting perspectives relating to the impact of grouping on gifted and high achieving students. While some felt that a heterogeneous model could draw out negative behaviors associated with boredom in gifted and high achieving students (School B), others felt that a mixed ability classroom created an environment of a beneficial mix of behavior as well (School B); however, there was also an expression of mixed opinions on the topic, “I think with discipline, I think it goes off the board…Sometimes they pull them down. It’s very hard to pull people up” (School A). Teachers alluded to other variables that affect student behavior such as class dynamics, student personalities, and personal self-discipline. Teachers seemed to think that these factors had greater influence on discipline in comparison to the variable of grouping structure.

The theme of *Teaching* was developed by conversation relating to middle school concept, “teaching the whole child” (School A), content area appropriateness, differentiation, and the notion of whom to teach to. It was stated by one participant that “You can’t put under-achieving students in a class with a teacher who doesn’t want to teach under-achieving students" (School A), and then followed up by another teacher that declared, "It happens" (School A). It seemed to several teachers that the instructional effectiveness and relationships between teachers and students played a larger role in student success than how students were grouped:

> I think it all goes back to relationships…Because I've taught in classrooms where I've had gifted kids and SpEd kids and they've all done well, especially on the standardized assessments and that kind of thing. I think it just goes back to how well you connect with them (School B).

Many teachers voiced the idea that some courses were more appropriate for homogeneous grouping than others according to content area; one teacher stated, "I think that in the areas of math and language arts that they need to be ability grouped" (School A). It was generally agreed upon that social studies and science could be taught using a heterogeneous model. (It should be noted that this is and has been the current instructional model for both schools for several years.) Teachers also agreed upon the need for providing rigorous curriculum and a supportive environment according to the expectations of the middle school concept. All teachers discussed the desire to challenge and support all students, although the best organizational structure in which to deliver that teaching was debated.

The theme of *Outside Variables* was developed by all other conversation that could contribute to student success. Concepts such as additional grouping structures like multi-age teams or looping teams were discussed, as well as additional influences that affect students: parental support, extracurricular activities, class size, grades, and scheduling. One teacher indicated that they did not think that grouping mattered at all in regards to the educational outcomes of students (School B), while the general consensus appeared to be that it is a combination of many variables determining whether gifted and high achieving students are successful. The organizational grouping structure is one of those many variables that influences outcomes, but which grouping structure is the most beneficial for gifted and high achieving students was never completely agreed upon.

Student Assessment Data

By following a nonexperimental design of descriptive and comparative data analysis (Creswell, 2014), the researcher was able to conduct statistical analysis of archival test data. Test data for gifted and high achieving students was retrieved from both school principals and was originally collected from the Statewide Longitudinal Data System (SLDS). Students were identified by the dichotomous variable (Lomax & Hays-Vaughn, 2012) homogeneous versus heterogeneous grouping and were also classified according to grade, content area, and school. Though the researcher initially intended to separate the data into grades and content areas, upon further review, it was determined that the focus should be on the overall impact of grouping on gifted and high achieving middle school students.

While the researcher attempted to run an ANCOVA initially, the assumption of homogeneity of regression could not be met with the available data, which indicated a group by covariate interaction (Field, 2009). Prior test scores were used as the covariate in the equation, and it was necessary to test these for appropriateness. Prior scores were included in the data in order to control for prior ability; however, it was determined that the prior scores were not an acceptable covariate for 2014-2015 data, but that they were an appropriate covariate for 2015-2016 data.

After running a one-way ANOVA for 2014-2015 data, output from SPSS indicated that class grouping structure was significant for scale score on the end of grade assessment and accounted for 16.7% variability in scores. This means that in 2014-2015, students in the accelerated homogeneous classes for 8th grade science and math outperformed heterogeneously clustered classes by over 36 scale points on average. In regards to the student growth percentile (SGP), there was no significant difference between class grouping structures. This means that in 2014-2015, students in the homogeneously accelerated classes for 8th grade science and math showed no advantage in SGP than students in the heterogeneously clustered classes.

It should be noted, however, that prior scale score was eliminated as an appropriate covariant for 2014-2015 data because prior scale score and grouping shared variance. This could mean that students who were placed in the accelerated classes already demonstrated higher ability than the students who were heterogeneously clustered.

After running a two-way ANOVA on the 2015-2016 data, output from SPSS indicated that prior scale score was significant for both scale score and SGP in comparison to class grouping structure. This data showed that, at least for 7th grade language arts, 7th grade math, and 8th grade language arts in 2015-2016, the student's prior ability was a better indicator for success than in which grouping structure the student received instruction.

According to the descriptive statistics from the data outputs, the average scale score in 2014-2015 was higher for homogeneously accelerated students (569.2) compared to heterogeneously clustered (532.8); this is contradictory to the 2015-2016 data in which the average scale score was higher for heterogeneously clustered students (592.5) than the homogeneously accelerated students (586.3).

Though the statistical analysis does indicate certain trends in the available data, it would be ill-advised to draw conclusions that would apply to a broader population than that of this sample. The available student assessment data supports the existing literature about grouping students, in that there are not clearly evident and obvious advantages to any one grouping structure.

Relationship Data

It was necessary for the researcher to run a regression in order to answer research question three: What is the relationship between teacher perceptions and data of student achievement and grouping for gifted and high achieving students? The dependent variable was scale score, and the independent variable was teacher perceptions. The teacher perception data was indicated by the Likert-scaled, valued responses of teacher survey statement one: Heterogeneous grouping increases the academic achievement of most higher-achieving students. As the statement addressed heterogeneous grouping, student data was limited to only heterogeneously clustered student scale results. When separated, the student data was organized according to scale score in descending order, and the highest scoring 61 scores were included to compare to the 61 teacher participant responses. The regression indicated that there was a positive correlation relationship between teacher perceptions of heterogeneous grouping impacting student achievement for gifted and high achieving students and class grouping structure. However, the R for this model was .197 and the R Squared was only 4%, which does not correspond to a very strong relationship.

Results

There were several aspects to this mixed-methods study in an attempt to answer the following research questions:

1) What are teacher perceptions of how grouping impacts gifted and high achieving students?

2) Does student achievement and growth differ for gifted and high-achieving students according to student grouping?

3) What is the relationship between teacher perceptions and data of student achievement and grouping for gifted and high achieving students?

Information regarding teacher perceptions was collected in quantitative and qualitative formats utilizing a teacher survey and by conducting teacher focus groups. Archival test data was analyzed in order to identify differences in achievement and growth according to grouping arrangements. Also, a statistical regression was run using data that was collected regarding teacher perceptions of grouping and student achievement data involving grouping in order to identify a relationship between the two. This combination of research yielded a range of data and information. The following results are divided into sections addressing the corresponding research question.

Teacher Perceptions

The initial survey data indicated that teachers were in agreement on some things, and were in disagreement on others. Speaking in generalizations, teachers agreed with the idea that high achieving students should have academic challenges and that teachers set high expectations for them, but there was not consensus on the grouping arrangement for those academic challenges to take place. There was also agreement among teachers about differentiation, increasing the pace for high achieving students, the benefits of heterogeneous grouping on low achieving students, and the benefits of mixed ability grouping on social and emotional growth. This indicated that all teachers felt the need to support gifted and high achieving students developmentally and to encourage all students in the classroom. This idea was reinforced in the focus groups, by lengthy discussion and agreement about supporting the whole child and middle school concept.

Teachers felt undecided about the impact of grouping on attendance and the rate of high achieving students dropping out of school. In the focus groups, teachers did not even mention these topics, as they seem to be unrelated in the participant perception to student grouping.

Finally, teachers disagreed on statements regarding academic achievement, student engagement, understanding concepts, participation, discipline, and equity. Not only was this evident in the survey responses, but these were ideas that were frequently debated in the focus group sessions. Supporters of acceleration and homogeneously grouping gifted and high achieving students addressed the frustration of dealing with achievement gaps, and the need that those students have for direct instruction and challenges. Supporters of cluster grouping and heterogeneously grouping gifted and high achieving students called upon the need for examples to benefit less capable learners and the negative pressures that acceleration can put on developing children.

Ultimately, the majority of the survey responses and the focus group sessions revealed what has previously been described in the literature in regards to teacher perceptions of grouping: results are mixed and inconclusive.

Student Achievement and Growth

According to the data, in 2014-2015, students who were in accelerated homogeneous courses demonstrated higher levels of achievement than students who were heterogeneously grouped. There was no significant difference in student SGP scores according to grouping. In 2015-2016, student grouping structure was not significant in regards to student performance or SGP, though prior scale score was an indicator for current growth.

Though this is telling, there are several concerns in regards to applying this to a larger scale. First of all, the data lumped together different content areas and grades into the annual data. As observed by teachers and mentioned separately in focus groups, different content areas benefit more from different grouping arrangements. Perhaps this could have had an influence on that data. Also, as was mentioned several times in both focus groups, classroom dynamic can determine student success. This study did not consider teacher effectiveness, which could have an effect on student achievement and SGP. In conclusion, this information should not be applied to a larger population than that of this sample.

Relationship Data

Though the relationship data output from SPSS was able to find a positive slope correlation relationship between teacher perspectives and grouping structure impact on high achieving student achievement, the regression information may have raised more questions than it answered. The teacher perspective came from a single statement, Heterogeneous grouping increases the academic achievement of most higher-achieving students. This is a very narrow focus in regards to the impact of grouping on student achievement. Additionally, this test did not account for the implementation of grouping in various content areas, which was a concern that was voiced in both focus groups. Another problem with this assessment is that the independent variable of teacher perspectives on this topic had 61 participants surveyed; whereas, the archival student data was a reflection of a limited number of classrooms, and hence, less teacher influences on achievement.

Compound these limitations with the theoretical issues associated with regression: “Regression analyses reveal relationships among variables but do not imply that the relationships are causal. Demonstration of causality is a logical and experimental, rather than statistical, problem” (Tabachnick & Fidell, 2007, p. 122). This means that though there is a relationship between variables, the regression does not imply that one variable causes an effect in the other. In all, though there was a statistical relationship identified, there is a need for further research to be done in regards to this research question.

Summary

The purpose of this chapter was to explain the results of the study. In this mixed-methods study, there was a combined sequential explanatory design and comparative ex post facto design present (Creswell, 2014). In order to collect teacher perspectives data, a survey was conducted with faculties of two district middle schools. Of the 89 educators polled, there were 61 participants who completed the survey. Teacher survey data was analyzed in SPSS for descriptive statistics regarding teacher perspectives of the impact of grouping structure on gifted and high achieving students. Focus groups were designed using data from the survey results, in order to create a purposeful stratified sample of participants (Creswell, 2014). This quantitative data were recorded, transcribed, analyzed, and coded for themes. Simultaneously, archival assessment data was collected from the two schools regarding gifted and high achieving students regarding homogeneously accelerated and heterogeneously clustered grouping structures. A final regression was run in order to identify a relationship between teacher perceptions and gifted and high achieving student achievement according to grouping.

Of the collected teacher perception data, there were many concepts that teachers disagreed upon. Of the student assessment data, findings indicated conflicting information in some areas. Of the relationship data, a statistically small relationship was established.

CHAPTER V

DISCUSSION

The purpose of this study was to analyze teacher perceptions and data related to the impact of grouping structures on gifted and high achieving middle school students. Though grouping has long been a debatable topic in education, there were gaps in the literature that dealt with grouping in rural schools (Pritchard, 2012) and teacher perceptions of the impact of grouping on gifted and high achieving students (Plucker et al., 2014). With legislation moving away from No Child Left Behind (GaDOE, 2015), which focused on a minimum standard of achievement, there was a need for analyzing current instructional practices for encouraging excellence for higher-achieving students.

While perspectives regarding grouping vary in educational systems around the world, nationally there has been a pendulum-effect theoretically between homogeneous grouping and heterogeneous grouping. Supporters of homogenous grouping argue that it encourages excellence for high achievers, while supporters of heterogeneous grouping argue that it creates equity for all students (Loveless, 1998).

Homogeneous acceleration as a class structure is one way to challenge gifted and high achieving students, and the purpose of this study was to analyze how teachers felt about the impact of grouping structure as well as to analyze what the data said about it. Teacher perspectives were collected by distributing surveys to two middle school faculties; based upon those results, a focus group was scheduled for each school. Teacher survey responses were analyzed and reported using descriptive statistics; focus group transcripts were analyzed and coded according to themes. Archival student assessment data was collected from each school about gifted and high achieving students according to grouping structure and end of grade achievement and growth data. This data was analyzed for trends in SPSS. Additionally, relationship data was analyzed by running a regression with the available data to establish a correlational relationship.

Analysis and Discussion of Research Findings

According to the research, faculty within two middle schools in a rural school district in Georgia have mixed perceptions regarding the impact of grouping on gifted and high achieving students. Results from the survey data indicated that teachers were in near total agreement on the need to challenge gifted and high achieving students and to set high expectations for them. Results also indicated that teachers were generally in agreement about topics relating to teaching, such as differentiation and instructional pace. Teacher perspectives were also favorable towards the environmental considerations of heterogeneous grouping, such as the benefit on lower achieving students and the effects on social and emotional growth. Results showed that most teachers were undecided about the impact that grouping had on attendance and dropout rates of gifted and high achieving students. That being said, the majority of survey statements yielded mixed results from participants. These statements dealt with concepts concerning academic achievement, student engagement, understanding concepts, class participation, discipline, and equity.

Many of the findings from the survey carried over as themes that were developed during the two focus group sessions. Teachers were in agreement that it is important to challenge and support the gifted and high achieving middle school student; teachers did not agree on the best environment for that challenge to take place. The data from the focus group sessions resulted in the following themes: *Academic Performance, Personal* *and Social Effects, Equity, Discipline, Teaching,* and *Outside Variables*. Teachers discussed many ideas within those themes.

Within the theme of *Academic Performance* was discussion relating to achievement gaps, acceleration, and class dynamics. Teachers felt that the current implementation of student grouping assignments was fair to most, but increasing achievement gaps make day-to-day instruction more difficult and that more opportunities should be made available for all students. Unfortunately, the literature about addressing achievement gaps is mixed, as Loveless (1998) claimed that homogeneous grouping broadens present gaps, while Sreckovic (2015) recommended that ability grouping be used as a way to decrease achievement gaps between low and high students. According to the focus group feedback, some teacher suggestions for remedying these issues consisted of retaining students in lower grades until ready for promotion to middle school, and adding additional connections classes for greater exposure to areas of non-academic interest. Furthermore, teachers generally felt positively towards acceleration as was found in the studies by Siegle, Wilson, and Little (2013) and Ansalone and Biafora (2004). Like these studies, there were mixed perceptions present as well.

Many of these mixed perceptions were discussed in the theme of *Personal and Social Effects*. Some of the specific topics addressed were negative effects and socialization. This was another example where the literature of Siegle et al. (2013) and Ansalone et al. (2004) were supported by the results of the current study, as teachers expressed varying beliefs regarding emotional and social outcomes of grouping. According to the focus group commentary, teachers would disagree with the statement by Rawlins (2004) that acceleration provides “positive effects on the academic ability of students with few negative side effects" (p. 44), as teachers focused on the negative pressures that an accelerated curriculum could place on an adolescent. Conversely, results supported Rimmer's (2010) study in that teachers felt heterogeneous grouping was beneficial for personal social effects, but were concerned when it came to issues of equity for gifted and high achieving students.

When discussing *Equity*, teachers focused on the effects on lower performing students and analyzing who grouping benefits. Teachers expressed concerns over the needs that lower achieving students have when grouped together, as well as the corresponding low teacher expectations than can occur, supporting ideas that were expressed by Hornby and Witte (2014). Oakes' (1985) book on anti-tracking was supported by teacher perspectives that stated the many disadvantages that tracking placed on lower achieving students. While Oakes declared that tracking could result in "hellish consequences" (p. 5), the sentiment was reiterated by the declaration that grouping implementation was "creating a monster" (School A). While there was some agreement amongst teachers that homogeneous grouping is bad for low performing students, as was expressed by Pritchard (2012), there was also concern voiced by some teachers that the needs of gifted students are not being met in heterogeneous classes, as was observed by Yun Dai and Chen (2014). The study with the most similar alignment in equity observations was conducted by O'Rourke (2013), in which results indicated that teachers found heterogeneous grouping beneficial for lower students for motivation and impacting study habits. At the same time, teachers did not feel that the academic needs of all students were met in the heterogeneous model, and they expressed frustration about the struggle to meet the needs of all students. This frustration over equity was an area of concern discussed in both focus group sessions.

When addressing the theme of *Discipline*, teachers commented on gifted behavior in heterogeneous settings, classroom effects on behavior and motivation. Teachers observed and noted that gifted students can experience boredom and frustration in heterogeneous classes; this was an observation previously observed by Stanley (1989). Some participants expressed that motivation was a better indicator of student behavior instead of grouping structure, an idea supported by Peklaj, Zagar, PecJak, and Levpuscek (2006) who reported that there was not a difference between overall motivation and grouping structure.

In terms of the theme of *Teaching*, comments related to middle school concept, the academic needs of certain content areas, differentiation, who to teach to, and learning. While Sousa (2009) noted that ability grouping benefits higher levels and pace for high achieving students, some study participants shared similar observations. The notion that middle school teachers provide more whole group instruction compared to small group instruction (Hollo & Hirn, 2015) seemed to be supported by some teacher commentary relating to instructional delivery; however, the same study indicated that teacher led small group can serve as a form of differentiation, and there was very positive feedback from participants regarding the persistent implementation of differentiation. It would have been informative to have collected data about differentiation strategies and practices from teachers.

Finally, *Outside Variables* consisted of the abundance of other factors that determine student success. Teachers felt that there were many contributing variables that affected student achievement aside from the impact of grouping structure. One of the suggestions that a teacher had was to take a closer look at connections classes and enrichment activities in connection to gifted and high achieving student success. This notion was already identified by Neber, Finsterwald, and Urban (2001) as they recommended that additional studies be conducted on exploratory studies and cooperative learning for gifted and high achieving students.

The analysis of student assessment data also yielded mixed results. For 8th grade math and 8th grade science, the test data came from 2014-2015, which was the last time that students in the accelerated course took the same end of grade assessment as all other 8th grade students. There was an inability to control for prior achievement, as the prior year scale scores were not appropriate as a covariate for this data. A one-way ANOVA was conducted on scale scores and student growth percentile (SGP) scores. Output from the scale score data indicated that students in accelerated courses outperformed students in the heterogeneously clustered model by over 30 points, and though there may be many reasons for that, 16.7% of that can be attributed to the grouping structure according to the variability of the model.

To contrast that data, the 7th grade math, 7th grade language arts, and 8th grade language arts assessment data from 2015-2016 yielded differing results. As the prior year scale scores were appropriate for this data set as a covariate, there was a control for prior ability, but since the assumption of homogeneity of regression could not be met, an ANCOVA was not a valid option. Instead, a two-way ANOVA was conducted on scale scores and SGP data. Output from the scale score data indicated that prior ability accounted for 21% of the variability in the data, while the grouping structure was not significant. The same outcome was evident in the SGP data, which showed that a lower prior score resulted in higher growth, regardless of the grouping structure.

Finally, a simple linear regression was run on teacher perception data in comparison to student achievement data to see if there was a relationship. The teacher perception data came from the survey response from 61 participants regarding statement one, Heterogeneous grouping increases the academic achievement of most high achieving students. The student achievement data came from the highest scoring scale scores of heterogeneously clustered gifted and high achieving students, as the statement dealt specifically with heterogeneous grouping. The regression indicated that there was a positive linear relationship between the two variables, though the R Squared of the model was small, at 4%.

Incidentally, the results of this study can contribute to the existing body of literature about the effect of grouping on students. Supporters of homogeneous grouping have argued that there are benefits for pacing and accelerating higher achieving students; supporters of heterogeneous grouping have argued that there are many negative effects of tracking that far outweigh any potential benefits of between-class ability grouping (Loveless, 1998). There is evidence from this study to support both sides of this argument.

Legally, many of the cases that dealt with ability grouping addressed the discriminatory practices that were the result of tracking. In fact, one of the court cases that was researched, *NAACP v. Georgia* (1985), listed the school district under study as a perpetrator of prejudicial grouping practices. The courts ruled in favor of the defendants in that case. That was many years ago, and current district practices encourage heterogeneous grouping whenever possible and homogeneous acceleration when appropriate.

The 2014-2015 data results for scale score and student growth percentile support Kulik's (1991) meta-analysis of grouping, in that the accelerated students outperformed the cluster grouped students in both scale and SGP. Kulik supported separate instruction for academic advancement and found that highly talented students benefitted from accelerated classes. Other studies have found that homogeneously grouped gifted students perform better academically (Banfield, 2005; Shi & Zhang, 2008; Mingming & Xinzheng, 2014). Furthermore, according to De Naeghel, Valcke, De Meyer, Warlop, van Braak, and Van Keer (2014), a high track has positive outcomes associated with student attitudes and achievement. This portion of the current study supports this existing literature. It would have been informative to have had data relating to student attitudes corresponding with student achievement, and should be considered for future research.

In contrast, the 2015-2016 data results for scale score and student growth percentile indicate that the grouping structure was not significant in regards to student achievement. These data support the study by Venkatakrishnan and Williams (2003) that indicated that ability grouping had limited advantages. These results also support the 2012 study by Salcedo-Gonzalez indicating that there was no improvement in student achievement as a result of grouping. Salcedo-Gonzalez (2012) reported a lack of research into instructional practices within the various grouping structures, which is an aspect of research that should be considered in future studies.

While specific grouping structures, such as partnership, small group, and whole group, were researched prior to conducting the study, there was not an emphasis placed on these in the study. The study instead focused more on the two grouping structures of heterogeneously clustered and homogeneously accelerated.

In regards to gifted programming, the practice of offering an accelerated curriculum and differentiated clustered grouping are the current models in practice at the middle schools involved in the study. The current district grouping policy supports Slavin’s (1986) perspective that “students’ primary identification should be with a heterogeneous group” (p. 76). This is evident as students are generally grouped within a heterogeneous model, for the exception of accelerated classes. As there is no evidence that full time segregation of gifted students is any better than part time (Shore, Cornell, Robinson, & Ward, 1991), and as Taylor (2007) recommended that ability grouping be implemented as a cost effective means of gifted programming, this type of gifted programming is appropriate.

There were mixed perspectives from teachers and mixed assessment data results on the effectiveness of one model in comparison to the other. It would be beneficial to undergo a more thorough analysis of teaching strategies that effective teachers implement to gauge what works concerning student success. As Tomlinson (2015) identified the most effective classrooms as learner-centered, knowledge-centered, instruction-centered, community-centered, and assessment-centered, it would be advantageous to conduct an analysis of effective teacher behaviors within homogeneously accelerated and heterogeneously clustered models.

Contributions of the Theoretical and Conceptual Frameworks

The theoretical framework of this study was based upon the theory of Social Comparison, as set forth by Festinger (1954). One of the ideas of this theory is that like-minded peers gravitate to each other and that social constructs can influence behavior. This could be used to argue for either side of the grouping debate. Teachers provided evidence within the focus groups that students wanted to be near other students of similar abilities, regardless of whether that ability was low, mid, or high; however, teachers also commented on the need to have gifted and high achieving students present in classes to serve as role models for encouraging academic and behavioral excellence. These observations support Festinger's theory according to group assimilation and acceptance.

An alternate idea that is developed within the theory is the significance of abilities on behavior. Though Peklaj et al. (2006) found that grouping had no influence on overall motivation, one conclusion of the study was that higher ability level groups displayed more intrinsic motivation. This could have implications for teacher practice, and could explain why all survey participants shared the need to encourage gifted and high achieving students, regardless of grouping structure. It is recommended that future researchers study teacher perspectives of motivational factors for gifted and high achieving students.

Furthermore, a major focus of this study was teacher perceptions and, according to Festinger (1954), opinions and abilities affect behavior. This theory translates into significant practice, as teacher perceptions could influence the behavior of students and provide an explanation for an underlying role in student motivation. Missett, Brunner, Callahan, Moon and Azano (2014) concluded that teacher practices reflect their individual beliefs; a conclusion that can also be drawn for the current study. This theoretical framework served as a driving rationale for the need to collect teacher input related to their perceptions of the impact of grouping on gifted and high achieving students.

Another concept that was developed during the focus group sessions was that of the negative pressures that an accelerated homogeneous grouping structure places on students. These negative social comparisons can generate insecurities and lower self-concept associated with the Big Fish Little Pond Effect (Rinn, Plucker, & Stocking, 2010; Shi et al., 2008). This type of comparison fits within the framework of the Theory of Social Comparison.

The conceptual framework of this study dealt with the interaction of the impact of grouping, teacher perceptions, academic achievement, and gifted and high achieving students. While the results of the study do provide information relating to this particular sample regarding this conceptual framework, there is still much that needs to be analyzed in the future relating to this topic in order to identify the best learning environment for students. As was mentioned in this section, it would be beneficial to conduct more research relating to the effect of various instructional practices, effective teacher behaviors, and clearly-defined differentiation strategies within different grouping structures. Also, it would be helpful to have collected data on student motivation and attitudes relating to achievement within different grouping structures.

Conclusions

The purpose of the study was to answer the following research questions:

1) What are teacher perceptions of how grouping impacts gifted and high achieving

students?

2) Does student achievement and growth differ for gifted and high-achieving students according to student grouping?

3) What is the relationship between teacher perceptions and data of student achievement and grouping for gifted and high achieving students?

Based on the data that were collected, despite some inconclusive results, there were several conclusions that could be drawn. Research question one information, relating to teacher perceptions, quantitative and qualitative data were collected via a teacher survey and teacher focus groups, respectively. Data from the teacher survey indicated that teachers felt strongly that gifted and high achieving students should be challenged and provided access to academic rigor, but how that could best be achieved according to grouping structure was debatable. Teachers expressed mixed perceptions when it came to the effect of heterogeneous grouping on equity for gifted and high achieving students, on discipline, academic achievement, class participation, student engagement, and on the depth of conceptual understanding. Many of these results from the survey were further elaborated on and developed during the focus group sessions.

While teachers agreed that on a strictly academic level homogeneous acceleration was beneficial for gifted and high achieving students, there was disagreement on much else. Some participants felt that having accelerated classes was not representative of the real world, while others disagreed; some participants argued that gifted and high achieving students would learn regardless of the grouping structure, while others felt they deserved more targeted instruction to be successful; some participants stated that acceleration in middle school was too much pressure on kids, while others thought that there were not enough opportunities for advancement. What can be concluded from this data was that teachers have strongly held beliefs about the influence of classroom dynamics on student success and that supporting the middle school concept was paramount to developing middle school students. The researcher observed that all teacher participants in the focus group sessions expressed the desire to offer the best environment possible for encouraging all students to achieve their potential. That being said, there were differences in the perspective relating to which environment is best and how large the impact of grouping is on student success.

In considering the validity and reliability of the data that were collected, the researcher established trustworthiness and inference quality of the data by incorporating triangulation techniques of multiple sources of data, member checking of focus group sessions, and reflexive journaling (Teddlie & Tashakkori, 2009).

Research question two information, relating to data associated with student achievement and growth as a result of grouping, had outputs that displayed dissimilar results. Data from 2014-2015 revealed that homogeneous accelerated grouping yielded higher results in scale score results and no effect on SGP results for 8th grade math and 8th grade science students. Data from 2015-2016 revealed that there was no significant difference according to grouping structure, but that prior ability was a better determinant of performance on scale score and SGP results for 7th grade math, 7th grade language arts, and 8th grade language arts students.

Assessment data met measurement validity as the data related to the similarity of measurement outcomes and the data related to the contrast of measurement outcomes (Teddlie et al., 2009). Tests for assumptions were assessed as data was analyzed, and adjustments for test appropriateness were made during analysis. The purpose of the assessment data under study was to measure a specific, well-defined attribute (Teddlie et al., 2009) of grouping structure. The quantitative data outputs accomplished that goal.

Research question three, relating to the relationship between teacher perceptions and student data regarding grouping, revealed a positive linear relationship between the two. It should be noted that there is minimal predictive validity (Teddlie et al., 2009) present in this model, as the R Squared was so small. The correlation that the linear regression attempted to make was to identify if student scale scores could be predicted according to teacher perceptions. According to Lomax and Hahs-Vaughn (2012), the assumptions that must be met in order to run a linear regression are independence, homogeneity of variance, normality, linearity, and fixed values of X. The researcher tested for assumptions and determined that the model is valid for this sample, though it is cautioned against generalizing to a larger population as the effect size was so small.

According to Teddlie and Tashakkori (2009), data quality in mixed methods research is determined based upon the separate quality of the quantitative and qualitative components. If validity and credibility can be established for both qualitative and quantitative data of the study, then the mixed methods study has high overall data quality (Teddlie et al., 2009). Based upon this determination, this mixed methods study can be considered to have high overall data quality.

Limitations to Research

While the statistical data in this study fit valid models under analysis, there were small R Squared sizes for many. This creates a limitation for generalizability to other populations (Lomax et al., 2012). Small effect sizes can indicate weak relationships between variables, and should be taken into consideration.

Another limitation in the quantitative data analysis is that though the focus groups were designed using a purposeful stratified sample of teachers according to the survey responses, some participants changed opinions when confronted with different contexts of topics. For example, one participant indicated that they were neutral on the survey responses but the conversation led them to discover a philosophy that supported heterogeneous grouping (School A). Another participant who was recruited as a supporter of homogeneous grouping according to survey responses contributed commentary that was much more supportive of heterogeneous grouping (School B). Though the sessions provided a plethora of data contributing to teacher perspectives regarding grouping, the focus group construct may have influenced opinions voiced by participants. In future research, perhaps interviews should be conducted with each participant first to firmly establish how participants feel in regards to the topic under study.

One more limitation of the study concerned student assessment data. Archival data were analyzed from two different school years, from a variety of different subject areas and grades, without controls for teacher effectiveness, content area consideration, or (in the case of 2014-2015 data) prior ability. Because of the differences in the data, different tests were run for the separate sets of information. Additionally, the variability that was reported was all less than 25%, regardless of the data set under study. This indicates that there are many other factors and variables that can impact student achievement, and in the future, it would be beneficial to identify and analyze these.

The relationship data results should also be considered a limitation of the study. It would be ill-advised to apply these results to a larger population, as the model’s reliability was so small. Also, the interaction of the data was random, and could result in different output if original data was entered in a different order.

The teacher survey should be considered a limitation of the study as well. Though appropriate for evaluating perceptions related to heterogeneous grouping, it would have been beneficial to have a secondary survey that offered the same questions in regards to homogeneous grouping. Having this additional aspect of the questionnaire may have improved the reliability and validity of the instrument for the purpose of this study by developing additional triangulation (Teddlie et al., 2009).

Implications of the Study

As interest was expressed from participants, the researcher has shared the results of the study with the administration and faculty at both schools. Though the information can be interpreted to support either side of the grouping debate argument, the study may provide specific topics of interest for the administration to follow-up on: teacher effectiveness, content area appropriateness, and teacher perspectives relating to grouping. As a study is liable to do, the results of this one have created more questions than have been answered, and the search for those answers may be continued in the schools involved in the study.

This study was originally inspired by the shift in accountability measures in Georgia away from No Child Left Behind to Every Student Succeeds Act (ESSA) and College and Career Readiness Performance Indicators (CCRPI). No Child Left Behind had a minimum standard that students were expected to make and made the educational focus one of equity. According to this new legislation, future education in Georgia will focus on excellence and incorporating rigor for all students (Georgia Department of

Education, 2015).

Though one of the intentions of the researcher was to follow-up the recommendations of Plucker and Callahan (2014) regarding analysis of the current state of gifted education, particularly regarding grouping fallacies, this study did not focus primarily on gifted students, but on high achieving students as well. The researchers also suggested that additional studies be conducted on the impact of grouping conditions on student outcomes. While the latter suggestion did occur in the current study, future research should identify programming that is exclusive for gifted children for more valid results in relationship to gifted students. Also, it would be beneficial to follow up on the study by Matthews and Shaunessy (2010) that illustrated the lack of clarity with national gifted guidelines by comparing gifted programming models on a larger scale.

This study also served to contribute to the body of literature related to the grouping debate. While Kulik (1992), Slavin (1986), and Oakes (1985) are often touted as the defining contributors to this field of knowledge, the oft-referenced studies occurred decades ago. In order to address the needs of gifted and high achieving students, it is necessary to evaluate the effectiveness of current practices (Plucker et al., 2014). By taking place in 2017, this study provides current and relevant information for future researchers.

Another implication of this study relates to teachers. According to the Organisation for Economic Co-operation and Development (2009), most teachers apply a constructivist view of education and use varied instructional techniques. It was important to gauge how teachers felt about grouping, to see if there was a classroom effect. The information that was collected indicated that there were trends in teacher perspectives, but that there were differences as well, depending upon the individual experiences and personal beliefs held by the educator.

Though one of the statements made in Chapter I concerned the implications for future policy and gifted programming, additional research will need to be conducted if there are to be any changes to future policy or programming. The results of this study, though informative, did not indicate that one grouping arrangement was better than another, and it would be unwise to base changes in policy or programming on the current study alone.

Recommendations for Future Research

The researcher has several recommendations for future studies and research. One recommendation is to analyze the effect of grouping on different content areas. This was a topic that was mentioned in both focus group sessions and repeated by various individuals. The argument that reading and math should be homogeneously accelerated, and the other content areas heterogeneously clustered was made and is one that should be put to further research in the future. It is suggested that specific content areas in middle school are compared and examined to see if there is a difference in the achievement gains that can be made by students according to grouping.

In line with this, it would be beneficial to extend future research past the specialized content area, and analyze teacher effectiveness, particularly as it relates to grouping. Do teachers that yield higher achievement scores receive placements teaching students who are higher achievers? Or do the more effective teachers receive placements with lower achieving students who have more room to grow? Teacher effectiveness and class dynamics were concepts that were discussed in both focus groups, and it would be interesting to see a quantitative analysis of these terms, specifically as they relate to grouping. This aligns with conclusions drawn by Plucker and Callahan (2014) that instruction may look different than much of the established study results from the 1980s and 1990s because of teacher training modifications that include differentiation. Ultimately, it would be beneficial to understand what makes a more effective classroom teacher based upon grouping arrangements.

As was discovered by Pritchard (2012), rural schools are frequently overlooked in educational research. An interesting study to conduct would be to see how being in a rural area influences gifted and high achieving student education in comparison to urban systems. If there were a way to track student progress over the course of a longitudinal analysis according to location, it would be interesting to learn implications for generalizability.

Another recommendation is to use a different survey instrument. The survey instrument focused on teacher perceptions of gifted and high achieving students involved in heterogeneous grouping. Having an additional questionnaire that collected data related specifically to teacher perceptions of gifted and high achieving students involved in homogeneous grouping would be beneficial to see if there are differences in the opinions. It is also encouraged to incorporate terminology that is more middle school versus high school specific. For example, the majority of participant responses were undecided regarding the impact of grouping on gifted and high achieving student dropout rates. Teachers may be undecided about the dropout rates of students because middle school students are ineligible to withdraw from school or dropout; therefore, this is a high school issue and may not be relevant to the current study.

On the other hand, if the focus of the future research were on disaffected gifted students, it would be interesting to know how grouping impacts behaviors such as dropouts and truancy. Abu-Hamour and Al-Hmouz (2013) noted that disaffected gifted students displayed less motivation, less self-regulation, and more negativity towards school. These were behaviors that teachers attributed to affecting discipline, and a more thorough study of why and how gifted students become disaffected may be an interesting contribution to the literature.

It is recommended that future researchers design a better model for identifying the relationship between teacher perceptions and student achievement. The current model, though valid, should not apply to a larger population. If pursued, a better regression analysis would involve student scale scores as a result of specific teacher behaviors in regards to grouping. This would provide information about how to improve instruction, versus the current question, which does little than lead to more questions.

It would also be beneficial to learn about teacher perspectives in a school that is structured differently than the two schools under analysis in this study. Teachers generally agreed that math and language arts courses should be accelerated, while science and social studies courses should remain homogeneous, which is a generalization of the offered accelerated curriculum of the school. (The accelerated science that is offered in 8th grade has a foundation in physics and math.) How do teachers in middle schools that offer accelerated courses for all academic content areas perceive the instructional value of such a curriculum?

Furthermore, it would be informative to analyze the differences between gifted and high achieving students when it comes to grouping structures. As these students are frequently lumped together, it would be telling to see if there is a discrepancy in achievement if they are separated. This could also assist in analysis of the effectiveness of current gifted programming, as the effectiveness of the gifted program model was largely unaddressed by this study. It would be appropriate to use VanTassel-Baska's analysis (2013) of gifted specific curriculum issues in designing this study. In order for this to be approached effectively, a larger sampling of students needs to be put under study. Because of the limited number of gifted students in attendance at the schools in this study, gifted and high achieving student results were analyzed together.

Summary

The debate over how best to group students has been around for centuries, with many supporters on both sides of the argument. The purpose of this study was to identify teacher perceptions and student data relating to the impact of grouping on gifted and high achieving middle school students. The importance of this study was based upon the need to reevaluate gifted programming, identify potential areas for instructional improvement, and focus on a rural population that is frequently overlooked in educational research. Though there are a variety of ways that grouping is conducted around the world, the policy in the district of study offered accelerated homogeneous and heterogeneous cluster grouping models for gifted and high achieving middle school students. According to the data, as has frequently been the case with studies related to grouping, the results are mixed and inconclusive.

In regards to teacher perceptions, there were mixed opinions relating to the effects of grouping. Some participants felt that grouping was critical, and others felt that it made little difference. Student data also yielded mixed results, with 2014-2015 data indicating that the homogeneously accelerated classes outperformed the heterogeneously clustered classes, and 2015-2016 data indicating that neither grouping structure held significance while prior achievement was an indicator for success. The relationship data indicated that there was a positive linear relationship between teacher perceptions and student assessment, although the researcher had reservations about the strength of the model. Though mixed, results of this study were valuable and informative, and provided many additional recommendations and suggestions for future research.

Though this study did not provide any clearly defined solutions to the debate regarding grouping, the information collected does support the existing body of literature regarding grouping, gifted students, middle school and teacher perceptions. Additionally, the information contained in this study can serve as a contribution to the literature, providing current and relevant information regarding teacher perceptions and student assessment data on the impact of grouping for gifted and high achieving middle school students. Ultimately, this study did not answer the great grouping debate question, but it did provide valid and thought-provoking results.

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APPENDICES

APPENDIX A

APPENDIX A – TEACHER SURVEY

From [Teacher perceptions of the impact of heterogeneous grouping on improving student achievement], by [Dr. Scott Rimmer], [2010], [Doctoral Dissertation, Immaculata College. (UMI No. 3388907)]. Copyright [2010] by [Dr. Scott Rimmer]. Reprinted [or Adapted] with permission.

This survey is designed to provide a mechanism for data collection to identify the impact that grouping has on gifted and high achieving middle school students, particularly in regards to student achievement. The information collected will be used to provide triangulation with semi-structured focus groups and with archival test data analysis conducted at the selected study location. Participants will only be identified by username in order to provide contact information if selected for focus group or interview. Responses to the survey are confidential. The researcher appreciates your participation in this study.

The major objective of the survey is to answer the following research question: What are teacher perceptions of how grouping impacts gifted and high achieving students?

Directions: Please complete the remainder of this survey by indicating the extent to which you agree or disagree with each statement by selecting the appropriate option to the right of each statement.

Statements	**Strongly Agree**	**Agree**	**Uncertain**	**Disagree**	**Strongly Disagree**
1. Heterogeneous grouping increases the academic achievement of most higher-achieving students					
2. Heterogeneous grouping increases student engagement for most higher-achieving students.					
3. I often encourage higher-achieving students to take challenging courses.					
4. Heterogeneous grouping increases understanding of concepts for most higher-achieving students.					
5. Heterogeneous grouping increases the academic skills and abilities of most lower-achieving students.					
6. The pace of instruction should be increased to accommodate higher-achieving students in heterogeneous groups.					
7. Heterogeneous grouping decreases the participation rates of most higher-achieving students.					
8. Heterogeneous grouping decreases classroom discipline issues for most higher-achieving students.					
9. I frequently increase the pace of instruction to address the needs and abilities of higher-achieving students.					
10. Heterogeneous grouping increases attendance for most higher-achieving students.					
11. Heterogeneous grouping increases equity for most higher-achieving students.					
12. Heterogeneous grouping has a positive effect on the social and emotional growth of most higher-achieving students.					
13. Heterogeneous grouping reduces the number of higher-achieving students that drop out of school					
14. Most higher-achieving students should have access to a rigorous curriculum.					
15. I regularly utilize differentiated instructional strategies.					
16.I have high expectations for higher-achieving students.					

APPENDIX B

APPENDIX B – FOCUS GROUP INTERVIEW QUESTIONS

From [Secondary school teachers' attitudes towards and beliefs about ability grouping], by [Hallam, S., & Ireson, J.], [2003], Copyright [2003] by [*British Journal Of Educational Psychology*]. Reprinted [or Adapted] with permission.

Teacher Focus Group and Interview Questions

Thank you for meeting with me today. The purpose of this focus group/interview is to gain insight into teacher perception of the impact of grouping on gifted and high achieving middle school students. I know that you have agreed to answer questions, but if you feel that you would rather not respond at any time, please let me know and we will proceed on to a different topic.

1. How does ability grouping impact academic performance of high ability students?
   1a. Are bright children neglected or held back in mixed ability classes?
   1b. Does homogeneous grouping ensures that bright children make maximum progress?

2. How does grouping affect gifted and high achieving students on a personal and social level?
   2a. Does a heterogeneous setting lead to better social adjustment for all students?
   2b. How is motivation impacted based upon the class structure?

3. How does grouping impact equity in classes?
   3a. Does homogeneous grouping benefit higher ability students at the expense of the less able?
   3b. Does a mixed ability grouping provide each child a fair chance?

4. How does ability grouping impact discipline?
   4a. Are there more discipline problems in mixed ability classes?
   4b. When classes are grouped homogeneously, how does it affect the behavior of the high ability students?

5. How does ability grouping impact teaching?
   5a. Does homogeneous grouping allow for student academic needs to be better met?
   5b. In mixed ability classes, does the teacher tend to teach to the average child?

Thank you for your time and insight. Results of the study will be shared with administrators and faculty at the conclusion of the study.

APPENDIX C

APPENDIX C - FOCUS GROUP PROTOCOL

Focus group participants will be notified of the time and date for the session after survey data is collected and analyzed.

Consent Process

Consent to agree to become a focus group participant was acquired when participants signed their consent letter at the faculty meeting. Informed consent was also shared digitally for all potential participants. Below is a summary of the information provided in the informed consent form:

- The purpose of the study is to analyze teacher perspectives and data regarding the impact of grouping on gifted and high achieving middle school students, particularly in regards to achievement. Survey data is one component of this study, as well as a stratified purposeful sample of two focus groups, and analysis of archival test data.
- The criteria for selection includes all faculty of the two district middle schools.
- Information provided during the focus groups will remain confidential.
- Participants have the right to withdraw from the study at any time, without penalty.
- The focus group session will not exceed one hour in length.
- Transcripts of the focus group will be available upon request.

Meeting Elements

1. Welcome and introductions
2. Review
    a. Purpose of the study
    b. What will be done with the information collected
    c. Why it is important to participate in discussion
3. Explanation of Process
    a. Provide guidelines for the discussion
    b. Collection of information, not an attempt at a consensus
    c. Data analysis three ways: survey, focus group, test data analysis
    d. Length of focus group
4. Ground rules
    a. Participation from everyone
    b. Understanding that all information will be kept confidential
    c. No side bar conversations
    d. Cell phones on vibrate/off
5. Turn on digital recorder
6. Ask for any questions from participants

a. Do not rush participants in responses
b. Use probing questions when necessary

APPENDIX D

APPENDIX D - FOCUS GROUP NOTICE EMAIL

Dear <Focus group participant name>,

Thank you for your willingness to participate in this study about the impact of grouping on gifted and high achieving middle school students. Your shared perspectives and expertise will provide a critical component of this mixed methods study. The focus group will take place:

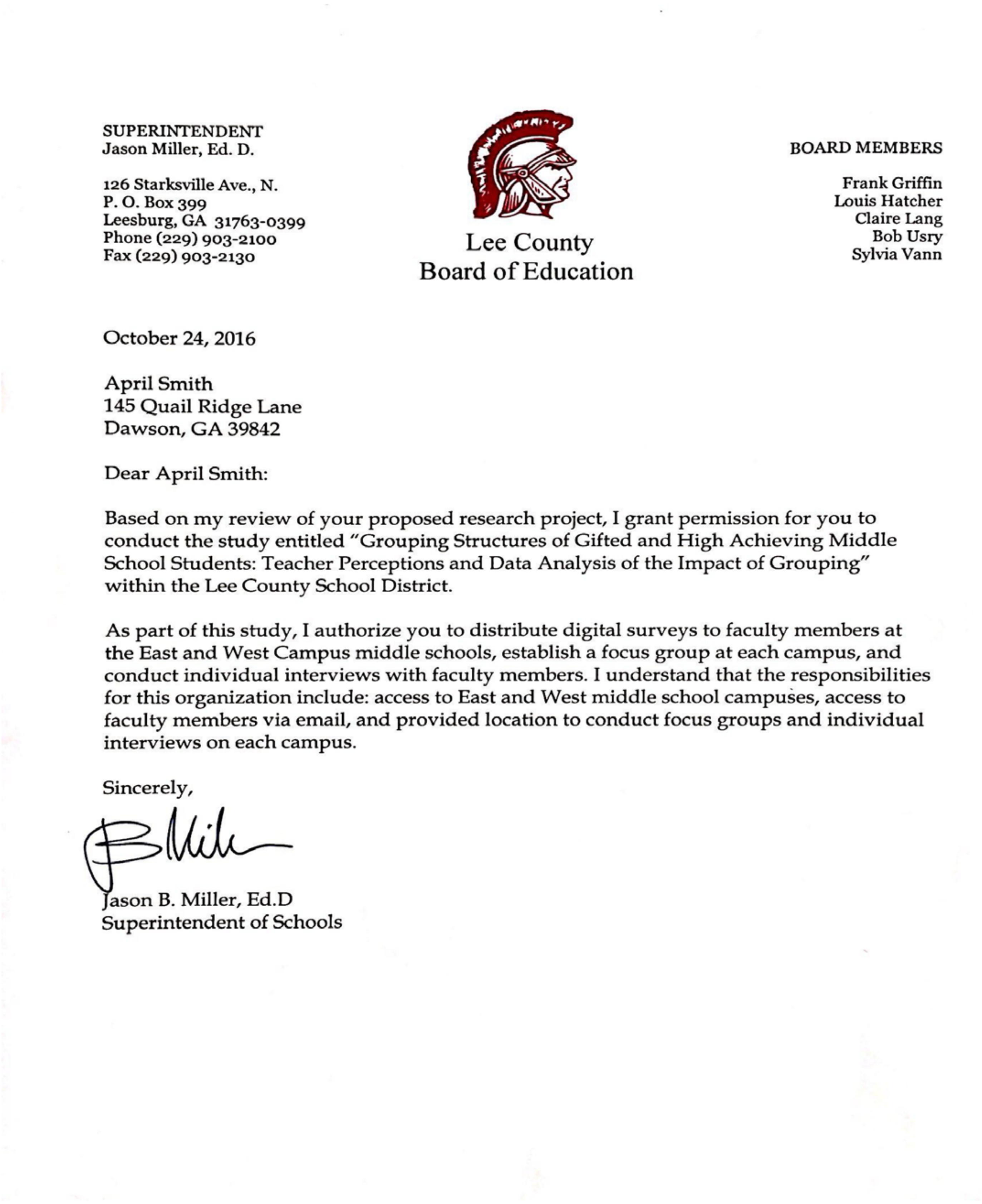
- <session date>
- <session time>
- <session location>

If you are uninterested in participating, or will be unable to attend, please let me know as soon as possible, so that a suitable replacement may be found. Thank you again for your participation.

Sincerely,

April Smith

APPENDIX E



SUPERINTENDENT
Jason Miller, Ed. D.

126 Starksville Ave., N.
P. O. Box 399
Leesburg, GA 31763-0399
Phone (229) 903-2100
Fax (229) 903-2130

Lee County
Board of Education

BOARD MEMBERS

Frank Griffin
Louis Hatcher
Claire Lang
Bob Usry
Sylvia Vann

October 24, 2016

April Smith
145 Quail Ridge Lane
Dawson, GA 39842

Dear April Smith:

Based on my review of your proposed research project, I grant permission for you to conduct the study entitled "Grouping Structures of Gifted and High Achieving Middle School Students: Teacher Perceptions and Data Analysis of the Impact of Grouping" within the Lee County School District.

As part of this study, I authorize you to distribute digital surveys to faculty members at the East and West Campus middle schools, establish a focus group at each campus, and conduct individual interviews with faculty members. I understand that the responsibilities for this organization include: access to East and West middle school campuses, access to faculty members via email, and provided location to conduct focus groups and individual interviews on each campus.

Sincerely,

Jason B. Miller, Ed.D
Superintendent of Schools

APPENDIX E – LETTER OF PERMISSION FROM SUPERINTENDENT

APPENDIX F

APPENDIX F – PERMISSION FOR SURVEY INSTRUMENTS

Lee County Apps
Powered by Google

Smith, April

<smithap@lee.k12.ga.us>

Re: Email from April Smith via L-SPioneers.org

Scott Rimmer <scott_rimmer@l-spioneers.org>	Mon, Nov 7, 2016 at 9:34 AM

To: "Smith, April" <smithap@lee.k12.ga.us>

To Whom it May Concern:

April Smith has my permission to reuse, reprint and revise the survey instrument from my study, "Teacher perceptions of the impact of heterogeneous grouping on improved student achievement," in her study, "Grouping structures of gifted and high achieving middle school students: Teacher perceptions and data analysis of the impact of grouping."

Scott K. Rimmer, Ed.D.

Sent from my iPhone

April Smith <smith_april3@columbusstate.edu>

Survey Instrument?

Hallam, Sue <s.hallam@ucl.ac.uk>	Mon, Nov 7, 2016 at 10:09 AM
To: April Smith <smith_april3@columbusstate.edu>	

To whom it may concern

April Smith has my permission to reuse, reprint and revise the questionnaire from my study, "Secondary school teachers' attitudes towards and beliefs about ability grouping," in her study, "Grouping structures of gifted and high achieving middle school students: Teacher perceptions and data analysis of the impact of grouping."

Susan Hallam MBE
Professor of Education and Music Psychology
UCL Institute of Education
20 Bedford Way
London
WC1H OAL
01908 522850

APPENDIX G

APPENDIX G - LETTER TO PRINCIPALS – REQUEST FOR INFORMATION

Dear <principal name>,

Thank you for your willingness to assist me in this study about the impact of grouping on gifted and high achieving middle school students. The purpose of this study is to answer the following research questions:

1) What are teacher perceptions of how grouping impacts gifted and high achieving students?

2) To what extent is there a relationship between student achievement and grouping for

gifted and high-achieving students?

3) What is the relationship between teacher perceptions and data of student achievement and grouping for gifted and high achieving students?

In this mixed methods study, I will be collecting teacher perspectives via survey and focus group data as well as analyzing archival test data. The Georgia Milestone End of Grade Assessment will be the test data under analysis, and I appreciate you sharing the following information for accelerated homogeneous and heterogeneously clustered gifted and high achieving students. I will replace names with codes in order to protect the confidentiality of students, and will destroy all of this data upon the conclusion of the study.

Please provide 2016 End of Grade Georgia Milestone Assessment data for the following accelerated and heterogeneously clustered courses for gifted and high achieving students:

- 6th grade math *(later omitted)*
- 7th grade language arts
- 7th grade math
- 8th grade science
- 8th grade math
  (later added 8th grade language arts)

Thank you for your assistance in this matter.

Sincerely,

April Smith

APPENDIX H

APPENDIX H - KEY STUDY CHART

Research Questions	*Literature Sources*	*Type: Method, Data, Validity*	*How are data analyzed*	*Rationale*
1) What are teacher perceptions of how grouping impacts gifted	Siegle, Wilson, and Little (2013); Watson (2014); Missett, Brunner, Callahan, Moon, and Azano	Method: Surveys; focus groups	Mixed Methods - Quantitative-descriptive analysis of survey results;	Quantitative: Determine if there are significant differences;

Research Questions	*Literature Sources*	*Type: Method, Data, Validity*	*How are data analyzed*	*Rationale*
and high-achieving students?	(2014) ; Rimmer (2010); O'Rourke (2013); Keller (2011); Watkins (2014)		Qualitative - focus group feedback coded for themes	Qual: look for categorical and repeating data
2) Does student acheivement and growth differ for gifted and high-achieving students according to student grouping?	Plucker & Callahan (2014); Hollo & Hirn (2015); Pritchard (2012); Taylor (2007); OECD (2012); Brulles, Saunders, & Cohn (2010); Banfield (2005); Shi et al. (2008); Patrick, Bangel, Jeon, and Townsend (2005); Matthews et al. (2013); Kalogrides and Loeb (2013)	Method: Statistical analysis of data collected from SLDS and grouping assignments	Quantitative - Statistical analysis of data collected from SLDS; 2015- One-way ANOVA, 2016- Two-way ANOVA	Quantitative: Determine if there are significant differences between grouping structure and student performance according to GA Milestones
3) What is the relationship between twacher perceptions and data of student achievement and grouping for gifted and high-achieving students?	Kulik (1992); Loveless (1998); Oakes (1985); Slavin (1986); Mingming and Xinzheng (2014); Matthews, Ritchotte, and McBee (2013); Hornby and Witte (2014); Venkatakrishnan and Wiliam (2003); Esparza (2015); De Naeghel, Valcke, De Meyer, Warlop, van Braak, & Van Keer (2014)	Method: GA Milestones results and teacher perceptions according to grouping structure	Quantitative - Statistical data based upon information from SLDS compared to teacher perception data collected from survey; simple linear regression	Quantitative: Determine if there are significant differences between grouping structures and teacher perceptions

APPENDIX I

APPENDIX I – INSTITUTIONAL REVIEW BOARD APPROVAL

CSU IRB <irb@columbusstate.edu>

Institutional Review Board
Columbus State University

Date: 1/17/17
Protocol Number: 17-052
Protocol Title: Grouping Structures of Gifted and High Achieving Middle School Students: Teacher Perceptions and Data Analysis of the Impact of Grouping
Principal Investigator: April Smith
Co-Principal Investigator: Margie Yates

Dear April Smith:

Representatives of the Columbus State University Institutional Review Board have reviewed your research proposal identified above. It has been determined that the research project poses minimal risk to subjects and qualifies for expedited review under 45 CFR 46.110.

Approval is granted for one (1) year from the date of this letter for approximately 91 subjects. Please note any changes to the protocol must be submitted in writing to the IRB before implementing the change(s). Any adverse events, unexpected problems, and/or incidents that involve risks to participants and/or others must be reported to the Institutional Review Board at irb@columbusstate.edu or (706) 507-8634.

You must submit a Final Report Form to the IRB once the project is completed or within 12 months from the date of this letter. If the study extends beyond 1 year, you must submit a Project Continuation Form to the IRB. Both forms are located on the CSU IRB website (https://aa.columbusstate.edu/research/irb/). The completed form should be submitted to irb@columbusstate.edu. Please note that either the Principal Investigator or Co-Principal Investigator can complete and submit this form to the IRB. Failure to submit this required form could delay the approval process for future IRB applications.

If you have further questions, please feel free to contact the IRB.

Sincerely,
Amber Dees, IRB Coordinator
Institutional Review Board
Columbus State University